भारतीय मानक
Indian Standard

IS 17017 (Part 2/Sec 3) : 2020

विधुतीय वाहन चालकता चार्जिंग पद्धति

भाग 2 प्लग, साकेट — निकास, वाहन कनेक्टर्स, और वाहन के इनलेट्स

अनुभाग 3 d.c. एवं a.c./d.c. पिन एवं कन्टैक्ट ट्यूब वाहन कप्लर के लिए संगतता एवं अंतर्विनिमेयता अपेक्षायें

Electric Vehicle Conductive Charging System

Part 2 Plugs, Socket — Outlets, Vehicle Connectors and Vehicle Inlets

Section 3 Dimensional compatibility and interchangeability requirements for d.c. and a.c./d.c. pin and contact-tube vehicle couplers

ICS 29.120.30, 43.120

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Electrotechnology in Mobility Sectional Committee, ETD 51

FOREWORD

This Indian Standard (Part 2/Sec 3) was adopted by the Bureau of Indian Standards, after the draft finalized by the Electrotechnology in Mobility Sectional Committee had been approved by the Electrotechnical Division Council.

This standard (Part 2) is the series of standards which covers the mechanical, electrical and performance requirements for dedicated plugs, socket outlets, vehicle connectors and vehicle inlets for interfacing between such dedicated charging equipment and the electric vehicle. This series consists of the following sections.

Section 1	General requirements, comprising clauses of a general character.
Section 2	Dimensional compatibility and interchangeability requirements for a.c. pin and contact-tube accessories.
Section 3	Dimensional compatibility and interchangeability requirements for d.c. and a.c./d.c. pin and contact-tube vehicle couplers.

Considerable assistance has been obtained from IEC 62196-3 : 2014 while preparing this standard. Most of the requirements of this standard correspond to the requirements of IEC 62196-3 : 2014 (except for the exemptions described in the following paragraphs).

The regulatory bodies, had decided that an India specific charging system be defined and the development of this has been entrusted to the Department of Science and Technology. As such, some provisions for inclusion of the outcome of this scientific exercise has been left in this standard. The standard will be modified/amended once the new design is validated and found stable.

The cross references of IEC have been modified to refer Indian Standards whenever available. Where corresponding Indian Standards are not available, the IEC references have been retained. The committee has decided that these IEC standards are suitable to be used till equivalent/corresponding Indian Standards are published.

The composition of the committee responsible for formulation of this standard is given at Annex A.

For the purpose of deciding whether a particular requirement of this standard is complied with the final value, observed or calculated expressing the result of a test, shall be rounded off in accordance with IS 2 : 1960 ‘Rules for rounding of numerical values (*revised*)’. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

Indian Standard

ELECTRIC VEHICLE CONDUCTIVE CHARGING SYSTEM

PART 2 PLUGS, SOCKET-OUTLETS, VEHICLE CONNECTORS AND VEHICLE INLETS

Section 3 Dimensional compatibility and interchangeability requirements for d.c. and a.c./d.c. pin and contact-tube vehicle couplers

1 SCOPE

This Standard (Part 2/Sec 3) is applicable to vehicle couplers with pins and contact- tubes of standardized configuration, herein also referred to as “accessories”, intended for use in electric vehicle conductive charging systems which incorporate control means, with rated operating voltage up to 1 500 V d.c. and rated current up to 250 A, and 1 000 V a.c. and rated current up to 250 A.

This Standard (Part 2/Sec 3) applies to high power d.c. interfaces and combined a.c./d.c. interfaces of vehicle couplers specified in IS 17017 (Part 2/Sec 1), and intended for use in conductive charging systems for circuits specified in IS 17017 (Part 1) and IEC 61851-23.

The d.c. vehicle connectors covered by this section of the standard are used only in charging mode 4, according to Case C in **6.2** of IS 17017(Part 1):2018, Figure 3 in **3.1.12** of IS 17017 (Part 1):2018, and IS 17017 (Part 2/Sec 2).

These vehicle couplers are intended to be used for circuits similar to those specified in IEC 61851-23, which operate at different voltages and which may include ELV and communication signals.

This section of IS 17017 (Part 2) applies to the vehicle couplers to be used in an ambient temperature of between -25°C and +55°C.

These vehicle couplers are intended to be connected only to cables with copper or copper- alloy conductors.

2 REFERENCES

This clause of IS 17017 (Part 2/Sec 1) is applicable except as follows:

Addition:

IS 17017 (Part 2/Sec 1), Electric vehicle conductive charging system Part 2: Plugs, socket- outlets, vehicle connectors and vehicle inlets – Conductive charging of electric vehicles – Section 1: General requirements

IS 17017 (Part 2/Sec 2) Electric vehicle conductive charging system Part 2: Plugs, socket-outlets, vehicle connectors and vehicle inlets — Conductive charging of electric vehicles – Section 2: Dimensional compatibility and interchangeability requirements for a.c. pin and contact-tube accessories.

3 TERMS AND DEFINITIONS

This clause of IS 17017 (Part 2/Sec 1) is applicable.

4 GENERAL

This clause of IS 17017 (Part 2/Sec 1) is applicable

5 RATINGS

This clause of IS 17017 (Part 2/Sec 1) is applicable.

6 CONNECTION BETWEEN THE POWER SUPPLY AND THE ELECTRIC VEHICLE

This clause of IS 17017 (Part 2/Sec 1) is applicable, except as follows:

6.4 Not applicable.

6.5 Not applicable.

Replacement:

6.6 d.c. Configurations

For all d.c. configurations, the d.c. interface may contain up to 12 power or signal contacts, with only one physical configuration of contact positions. The electrical ratings and their function are described in Table 4 of IS 17017 (Part 2/Sec 1). They shall be used in a system according to IEC 61851-23, Annex AA “d.c. electric vehicle charging station of System A”. See the corresponding standard sheets for additional interface details.

6.8 Contact Sequencing

Addition:

For all d.c. interfaces, the contact sequence during the connection process shall be:

a) Protective Earth (if any);
b) d.c. power contacts;
c) Isolation monitor contacts;
d) Proximity detection or connection switch contact; and
e) Control pilot contact.

During disconnection the order shall be reversed.

NOTES

1 If provided, isolation monitor contacts shall mate before or simultaneously with the control pilot contact.

2 If provided, proximity detection or connection switch contacts shall mate before or simultaneously with the control pilot contact.

Addition:

6.301 Configuration FF Combined Interface

A combined interface extends the use of a basic interface for a.c. and d.c charging. d.c. charging can be achieved by providing additional d.c. power contacts to supply d.c. energy to the electric vehicle.

The basic portion of the combined vehicle inlet can be used with a basic connector for a.c. charging only or a combined vehicle connector for d.c. charging.

Combined couplers shall only be used for d.c. charging with the d.c. electric vehicle charging station of System C described in IEC 61851-23, Annex CC.

General requirements and ratings for all contacts are given in IS 17017 (Part 2/Sec 1), Table 5.

If the a.c. or d.c ratings of a mating connector and inlet differ, the coupler (mating pair) shall be used at the lower rating of either the vehicle connector or vehicle inlet of the mating accessory.

Ratings and requirements for the use of the combined interface with a.c. are defined in IS 17017 (Part 2/Sec 2).

Electric vehicles with a combined vehicle inlet shall withstand a.c. voltage at the power contacts of the basic portion.

NOTE − This requirement will be withdrawn when an equivalent update is included in ISO 17409.

7 CLASSIFICATION OF ACCESSORIES

This clause of IS 17017 (Part 2/Sec 1) is applicable, except as follows:

Replacement:

7.1 According to Purpose

a) Vehicle connectors; and
b) Vehicle inlets.

7.5 According to Interface

As specified in **6** and IS 17017 (Part 1):2018. Combined interface

Table 301 Compatibility of Mating Accessories at Vehicle

(*Clauses* 6.6, 6.301)

	Vehicle connector		
	Type 2	**Configuration AA**	**Configuration FF**
Type 2	Yes	-	-
Configuration AA	-	Yes	-
Configuration FF	Yes	-	Yes

NOTES

1 For Type 2 see the corresponding standard sheets in IS 17017 (Part 2/Sec 2)..

2 For configurations AA and FF, see the corresponding standards sheets.

Addition:

7.301 According to the standard sheets used:

a) Configuration AA; and
b) Configuration FF.

a.c. corresponding to Type 2 in IS (Part 2/Sec 2) and d.c.

8 MARKING

This clause of IS 17017 (Part 2/Sec 1) is applicable.

9 DIMENSIONS

This clause of IS 17017 (Part 2/Sec 1) is applicable, except as follows:

Replacement:

9.1 The vehicle connector and vehicle inlet shall comply with the relevant configuration shown in Table 302.

Table 302 Interface Overview

(*Clause* 9.1)

Configuration	Dimensions Described in Standard Sheet	*Max* Rated Voltage *V d.c.*	*Max* Rated Current *A*	Shall Only be Used with d.c. Charging Station According to
AA	3-I	600	200	IEC 61851-23:2014 Annex AA
FF	3-IV	1000	200	IEC 61851-23:2014 Annex CC

10 PROTECTION AGAINST ELECTRIC SHOCK

This clause of IS 17017 (Part 2/Sec 1) is applicable, except as follows:

Addition:

10.301 For configuration AA, vehicle couplers shall be used only with the isolated d.c. electric vehicle charging station as specified in IEC 61851-23.

10.302 For configurations FF, vehicle couplers shall be used with either isolated or non- isolated d.c. electric vehicle charging station as specified in IEC 61851-23.

11 SIZE AND COLOUR OF EARTHING CONDUCTORS

This clause of IS 17017 (Part 2/Sec 1) is applicable.

12 PROVISION FOR EARTHING

This clause of IS 17017 (Part 2/Sec 1) is applicable except as follows:

Replacement:

12.1 Accessories shall be provided with a protective earthing contact and earthing terminal in case that the vehicle is connected galvanically to the mains through this accessory. Protective earthing contacts shall be directly and reliably connected to the protective earthing terminals.

NOTE — If the vehicle is connected to the electric vehicle charging station with the insulating device between the vehicle and the mains (for example, insulating transformer), the vehicle is deemed not to be galvanically connected.

13 TERMINALS

This clause of IS 17017 (Part 2/Sec 1) is applicable.

14 INTERLOCKS

This clause of IS 17017 (Part 2/Sec 1) is applicable except as follows:

Addition:

14.301 Latching Function

Accessories shall be provided with a latching device to prevent the connection to be separated unintentionally or by unauthorized persons.

The interlock function shall be performed by the proper functioning of the latching device. A means shall be provided to indicate that the interlock is properly engaged.

Compliance is checked by inspection and manual test.

15 RESISTANCE TO AGING OF RUBBER AND THERMOPLASTIC MATERIAL

This clause of IS 17017 (Part 2/Sec 1) is applicable.

16 GENERAL CONSTRUCTION

This clause of IS 17017(Part 2/Sec 1) is applicable except as follows:

16.15 Replacement of the first paragraph by:

The force to insert and withdraw a vehicle connector shall be less than 100 N. Means to facilitate the insertion and withdrawal of the vehicle connector from the vehicle inlet may be provided. If a vehicle coupler is equipped with an assist device to reduce this force (for example, mechanical assist device), the operating force of assist device shall be less than 100 N.

17 CONSTRUCTION OF SOCKET-OUTLETS

This clause of IS 17017 (Part 2/Sec 1) is not applicable.

18 CONSTRUCTION OF PLUGS AND VEHICLE CONNECTORS

This clause of IS 17017 (Part 2/Sec 1) is applicable.

19 CONSTRUCTION OF VEHICLE INLETS

This clause of IS 17017 (Part 2/Sec 1) is applicable.

20 DEGREES OF PROTECTION

This clause of IS 17017 (Part 2/Sec 1) is applicable.

21 INSULATION RESISTANCE AND DIELECTRIC STRENGTH

This clause of IS 17017(Part 2/Sec 1) is applicable.

22 BREAKING CAPACITY

This clause of IS 17017 (Part 2/Sec 1) is applicable, except as follows:

Replacement:

22.3 d.c. accessories or the d.c. portions of combined a.c./d.c. accessories are not required to be tested in accordance with **22.3** of IS 17017 (Part 2/Sec 1).

23 NORMAL OPERATION

This clause of IS 17017 (Part 2/Sec 1) is applicable, except as follows:

Addition:

23.2 For d.c. vehicle inlets and vehicle connectors the maximum number of operation cycles is 10 000 with no electrical load. In case d.c. vehicle inlets contain an a.c. part, these shall be tested separately with new accessories.

24 TEMPERATURE RISE

This clause of IS 17017 (Part 2/Sec 1) is applicable, except as follows:

24.1 Addition, after the first paragraph:

A thermal cut-out in the vehicle connector is optional for d.c. charging .

Replacement of the fourth paragraph by:

The test current is a direct or alternating current of the value shown in Table 18 of IS 17017 (Part 2/Sec 1). For the purposes of the temperature rise test, any thermal cut-out device shall be short circuited (i.e. the test results shall be acceptable without relying on the thermal cut-out).

25 FLEXIBLE CABLES AND THEIR CONNECTION

This clause of IS 17017 (Part 2/Sec 1) is applicable, except as follows:

Addition:

25.301 Accessories not Suitable for Making and Breaking an Electric Circuit under Load

Accessories that are not suitable for making and breaking under load shall be submitted to the additional following test:

Non-rewirable accessories are tested as delivered.

Rewirable accessories are tested with the maximum and minimum size cables recommended by the manufacturer.

Conductors of the cable of rewirable accessories are introduced into the terminals, the terminal screws being tightened just sufficiently to prevent the conductors from easily changing their position.

The cable anchorage is used in the normal way, clamping screws being tightened with a torque equal to two-thirds of that specified in **27.1** of IS 17017 (Part 2/Sec 1). After reassembly of the sample, with cable glands, if any, in position, the component parts shall fit snugly and it shall not be possible to push the cable into the sample to any appreciable extent.

The sample is fixed in the test apparatus so that the axis of the cable is vertical where it enters the sample.

The cable is then subjected once to a pull of 750 N. The pull is applied without jerks for a duration of 1 min.

Immediately afterwards, the cable is subjected to a torque, of the value specified Table 19

of IS 17017 (Part 2/Sec 1), for 1 min.

During the tests, the cable shall not be damaged.

After the tests, the cable shall not have been displaced by more than the values indicated in Table 19 of IS 17017 (Part 2/Sec 1). For rewirable accessories, the ends of the conductors shall not have moved noticeably in the terminals; for non-rewirable accessories, there shall be no break in the electrical connections.

For the measurement of the longitudinal displacement, a mark is made on the cable at a distance of approximately 2 cm from the end of the sample or the cable anchorage before starting the tests. If, for non-rewirable accessories, there is no definite end to the sample, an additional mark is made on the body of the sample.

After the tests, the displacement of the mark on the cable in relation to the sample or the cable anchorage is measured.

26 MECHANICAL STRENGTH

This clause of IS 17017 (Part 2/Sec 1) is applicable**.**

27 SCREWS, CURRENT-CARRYING PARTS AND CONNECTIONS

This clause of IS 17017 (Part 2/Sec 1) is applicable**.**

28 CREEPAGE DISTANCES, CLEARANCES AND DISTANCES

This clause of IS 17017 (Part 2/Sec 1) is applicable**.**

29 RESISTANCE TO HEAT, TO FIRE AND TO TRACKING

This clause of IS 17017 (Part 2/Sec 1) is applicable**.**

30 CORROSION AND RESISTANCE TO RUSTING

This clause of IS 17017 (Part 2/Sec 1) is applicable

31 CONDITIONAL SHORT-CIRCUIT CURRENT WITHSTAND TEST

This clause of IS 17017 (Part 2/Sec 1) is not applicable.

32 ELECTROMAGNETIC COMPATIBILITY

This clause of IS 17017 (Part 2/Sec 1) is not applicable.

33 VEHICLE DRIVEOVER

This clause of IS 17017 (Part 2/Sec 1) is not applicable except as follows:

33.3 Not applicable.

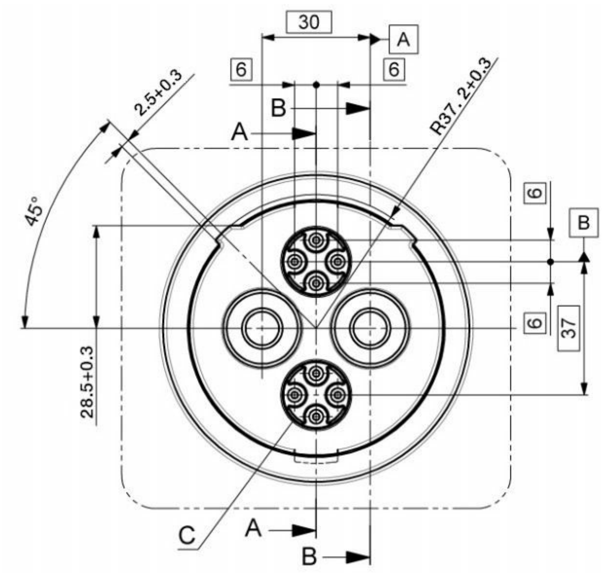
33.4 Not applicable.

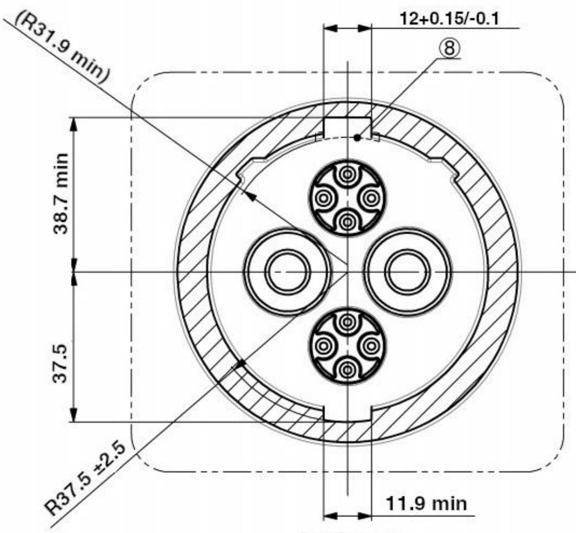
STANDARD SHEETS
CONFIGURATION AA
VEHICLE COUPLER 200 A 600 V D.C.
STANDARD SHEET 3-Ia

(*Clause* 9.1)

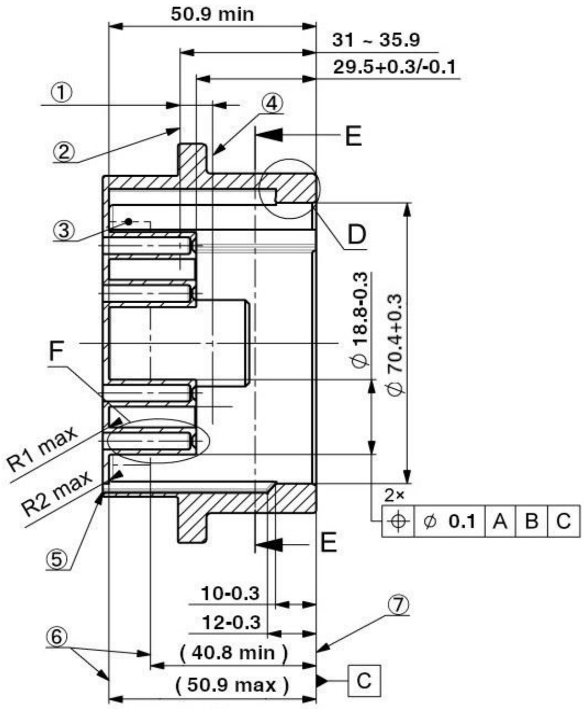
VEHICLE INLET
Sheet 1

All linear dimensions in millimetres.
Dimensions in parenthesis for reference.

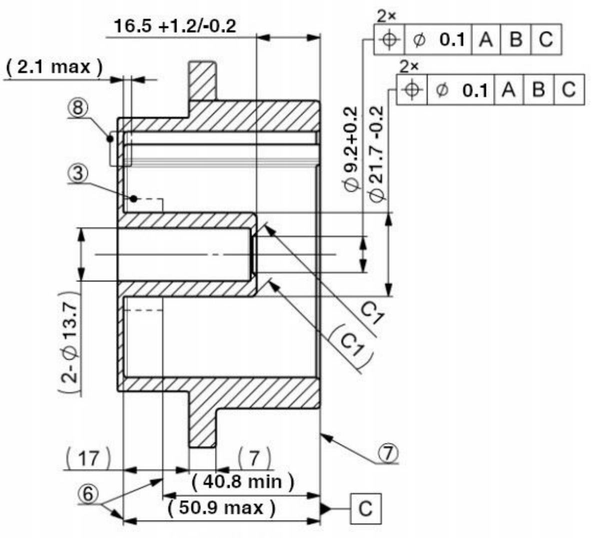




SEC.E-E



SEC.A-A



SEC.B-B

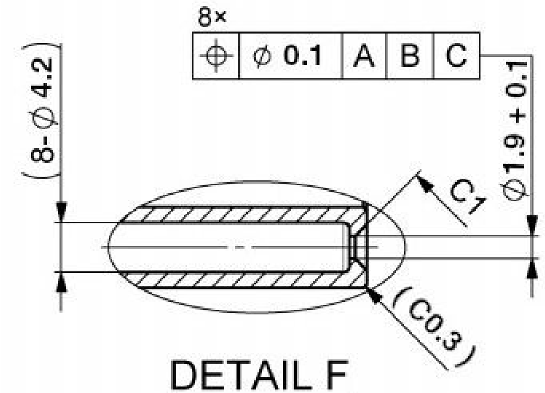
STANDARD SHEET 3-Ia

(*Clause* 9.1)

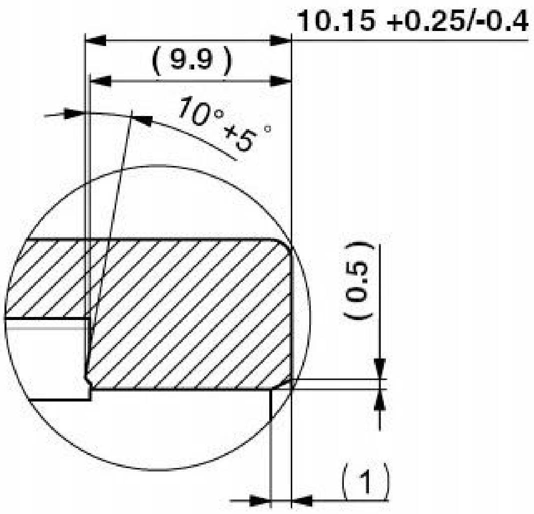
VEHICLE INLET

Sheet 2 *(continuation of Sheet 1)*

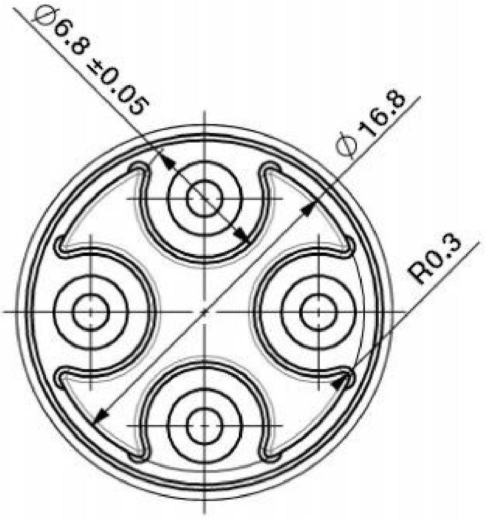
All linear dimensions in millimetres.
Dimensions in parenthesis for reference.



DETAIL F



DETAIL D



DETAIL C

General tolerance			
10 *Max*	50 *Max*	100 *Max*	Angle
± 0.15	± 0.2	± 0.3	± 30’

Key

1	8 min difference between power and signal terminal contact point at worst case
2	Signal terminal contact point
3	Packing (if necessary);one of sealing method when coupled with vehicle connector
4	Power terminal contact point
5	Drain hole
6	Sealing area
7	Standard datum plane
8	Grommet (if necessary)

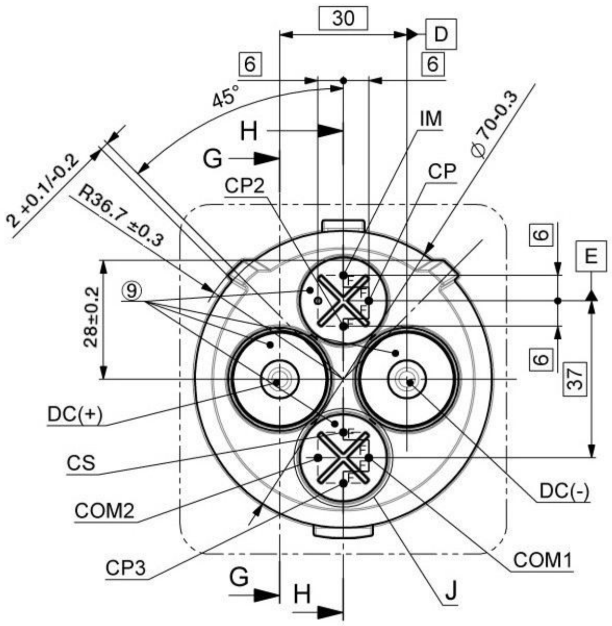
STANDARD SHEET 3-Ib

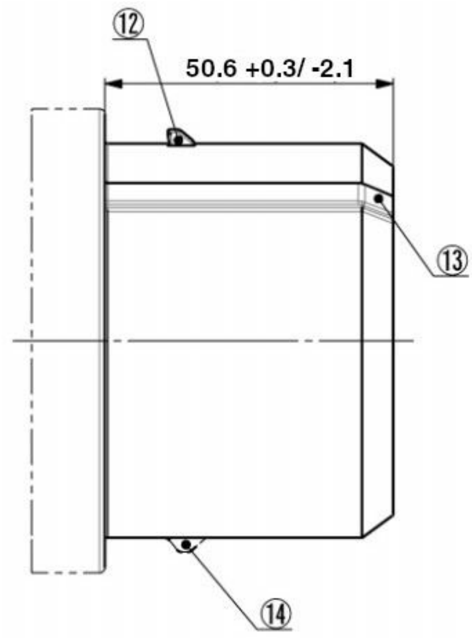
(*Clause* 9.1)

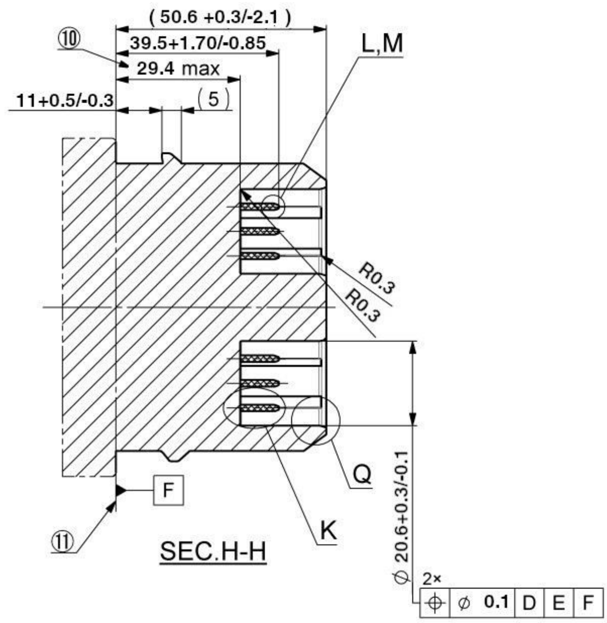
VEHICLE CONNECTOR

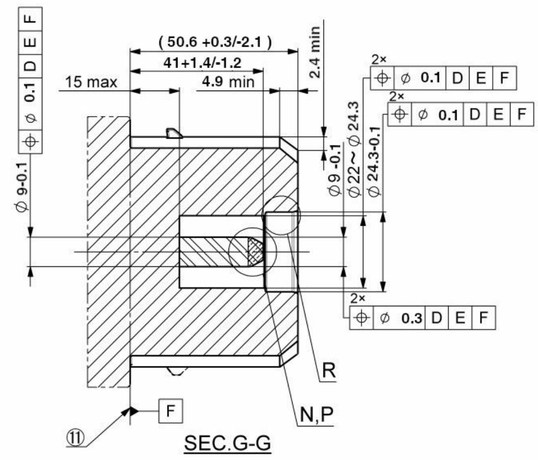
Sheet 1

All linear dimensions in millimetres.
Dimensions in parenthesis for reference.









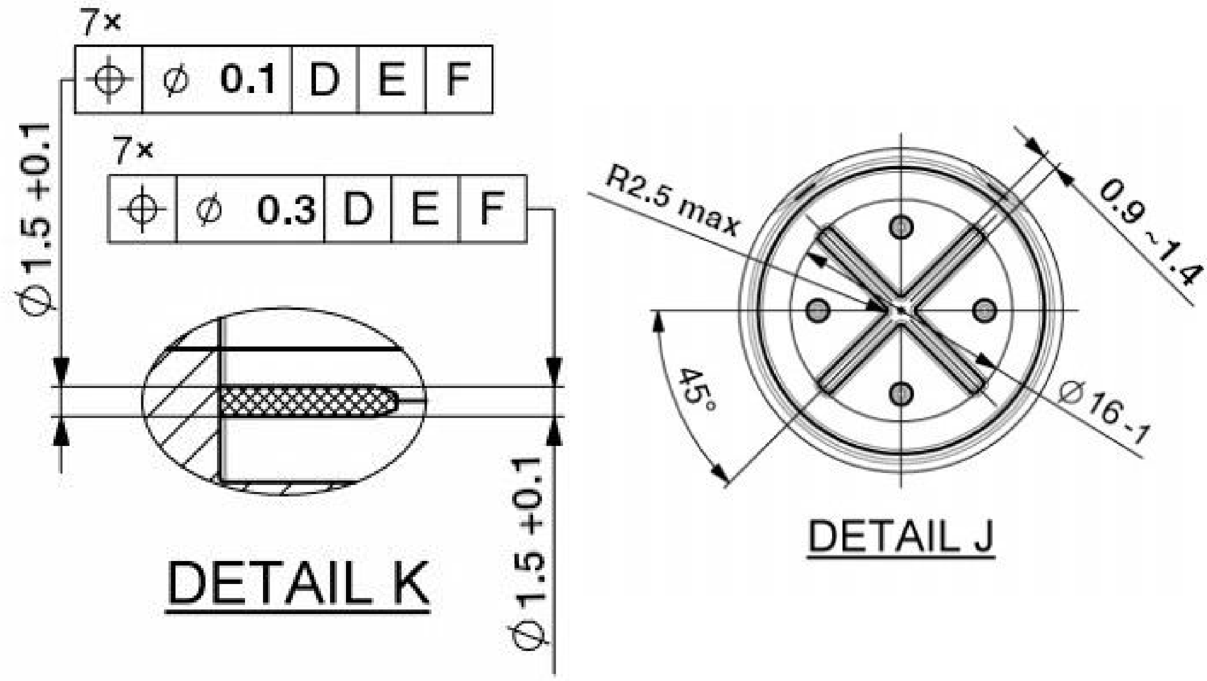
STANDARD SHEET 3-Ib

(*Clause* 9.1)

VEHICLE CONNECTOR

Sheet 2 *(continuation of Sheet 1)*

All linear dimensions in millimetres.



General tolerance			
10 *Max*	50 *Max*	100 *Max*	Angle
± 0.15	± 0.2	± 0.3	± 30

Key

9	Drain hole (if necessary)
10	For optional latch outline: 29,5
11	maximum Standard datum plane
12	Latch
13	Any dimension for guide rib
14	Lever stopper (if necessary) (This portion is movable)

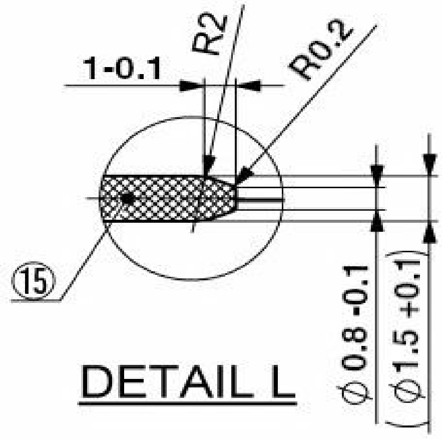
STANDARD SHEET 3-Ib

(*Clause* 9.1)

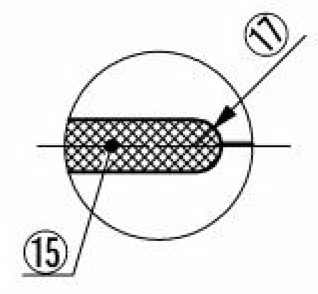
VEHICLE CONNECTOR

Sheet 3 *(continuation of Sheet 2)*

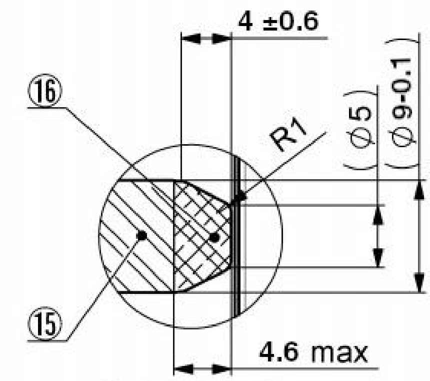
All linear dimensions in millimetres.
Dimensions in parenthesis for reference.



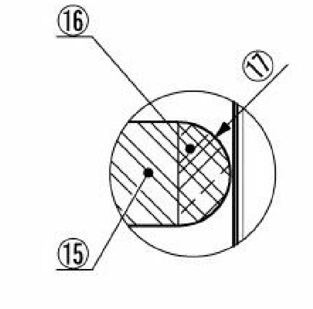
DETAIL L



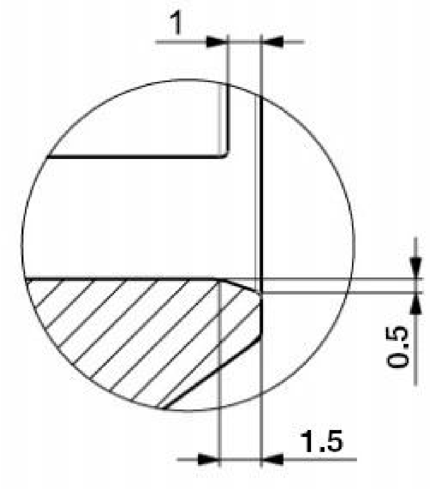
DETAIL M
(㉒)



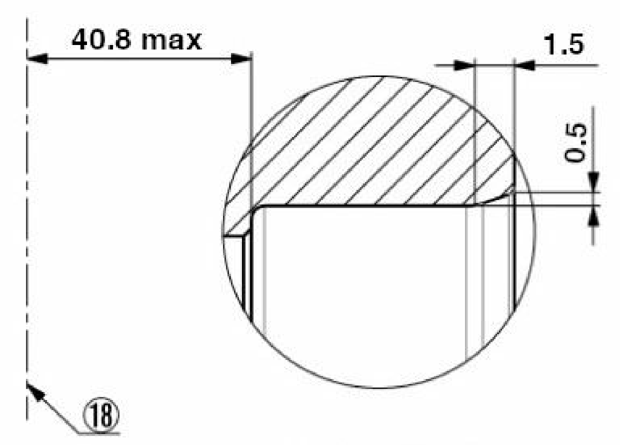
DETAIL N



DETAIL P
(㉒)



DETAIL Q



DETAIL R

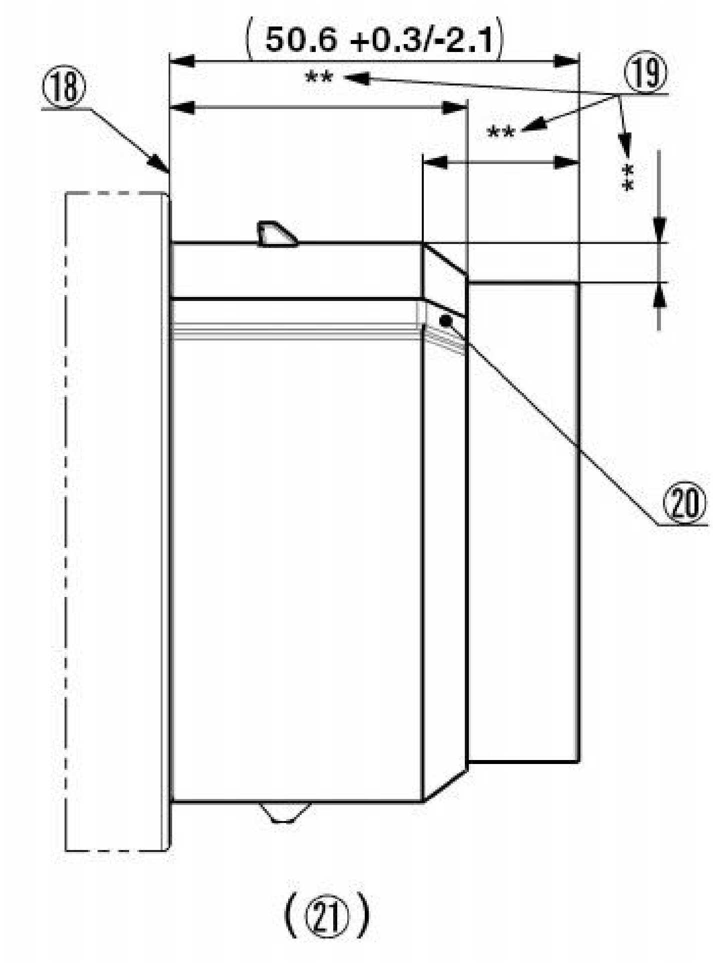
STANDARD SHEET 3-Ib

(*Clause* 9.1)

VEHICLE CONNECTOR

Sheet 4 *(continuation of Sheet 3)*

All linear dimensions in millimetres.
Dimensions in parenthesis for reference.



Key

15	Terminal.
16	Insulated end cap.
17	Full R.
18	Standard datum plane.
19	Any dimension.
20	Any dimension for guide rib.
21	Optional for movable terminal design.
22	Optional shape.

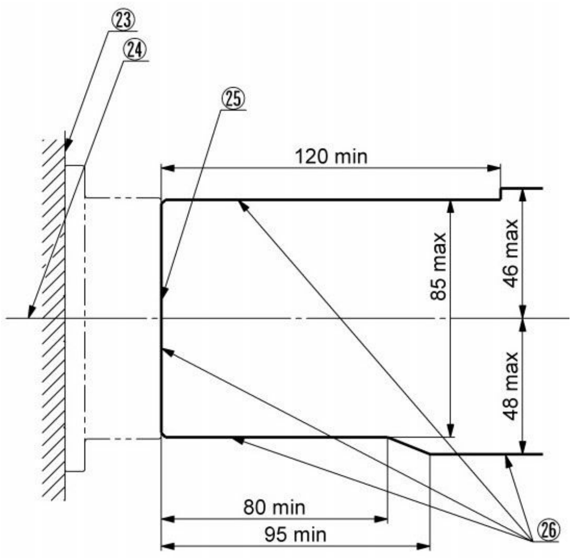
STANDARD SHEET 3-Ic

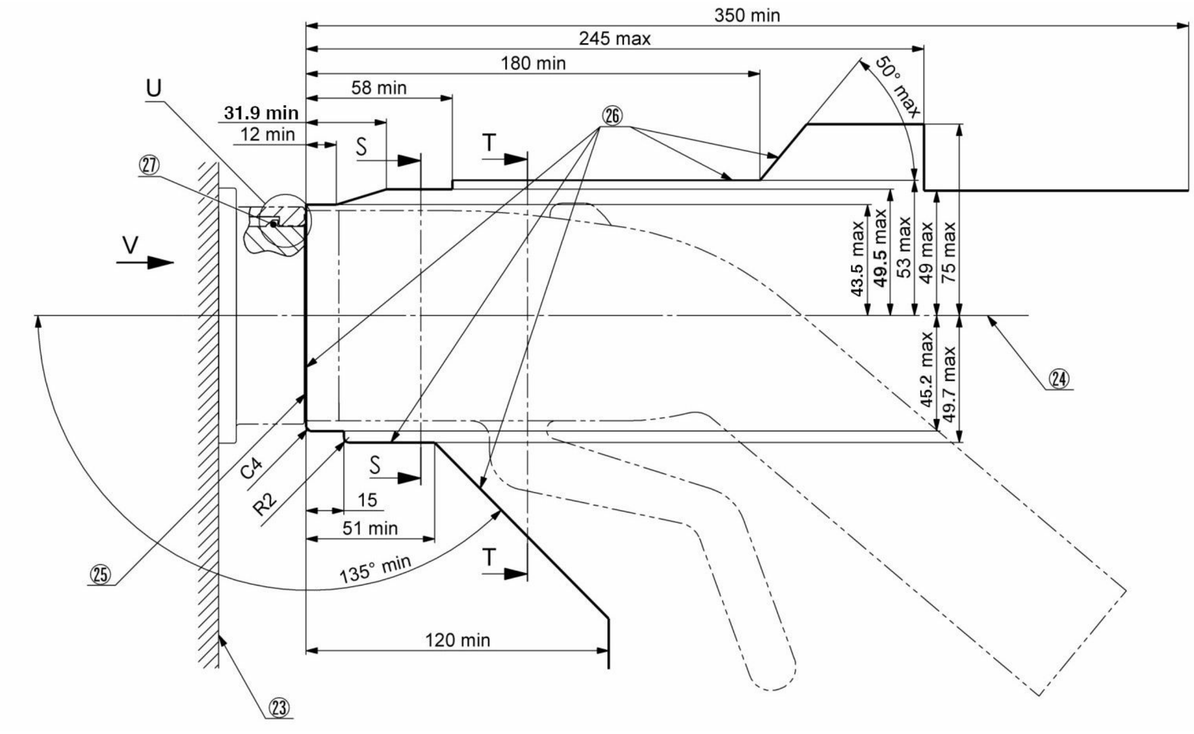
(*Clause* 9.1)

MAXIMUM DIMENSIONS OF VEHICLE CONNECTOR BODY OUTLINE

Sheet 1

All linear dimensions in millimetres.





STANDARD SHEET 3-Ic

(*Clause* 9.1)

RETAINING MEANS FOR VEHICLE COUPLER

Sheet 2 *(continuation of Sheet 1)*

Key

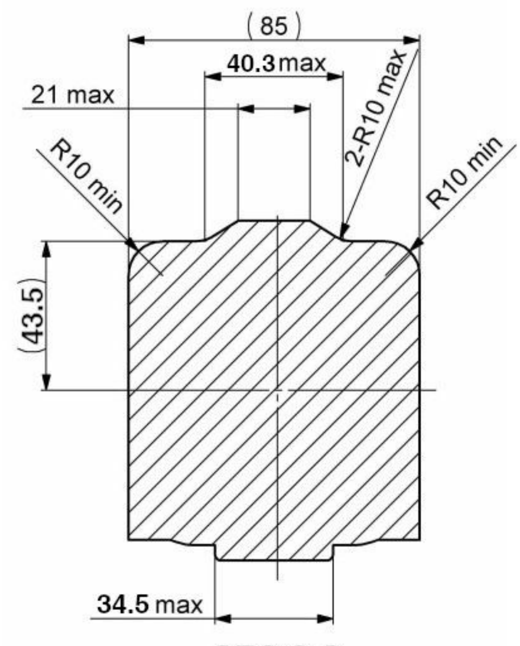
23	Vehicle surface.
24	Centre line of vehicle connector.
25	Standard datum plane.
26	Vehicle connector body shape shall be within these solid lines (The sketches are not intended to restrict design of vehicle connector).
27	Latch,

STANDARD SHEET 3-Id

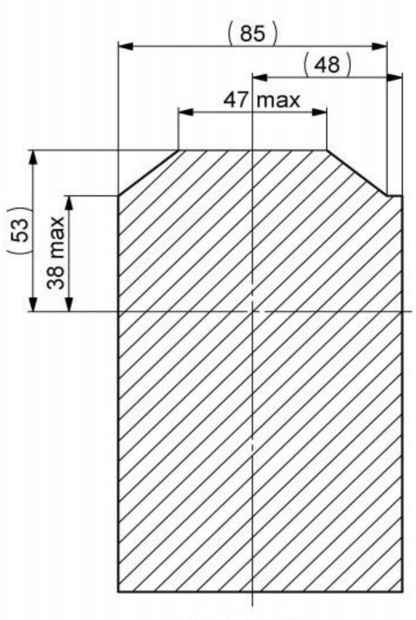
(*Clause* 9.1)

MAXIMUM DIMENSIONS OF VEHICLE CONNECTOR BODY OUTLINE

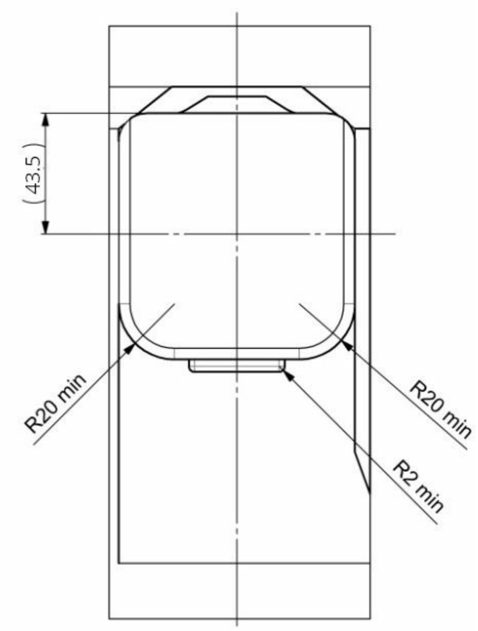
All dimensions in millimetres.
Dimensions in parenthesis for reference.

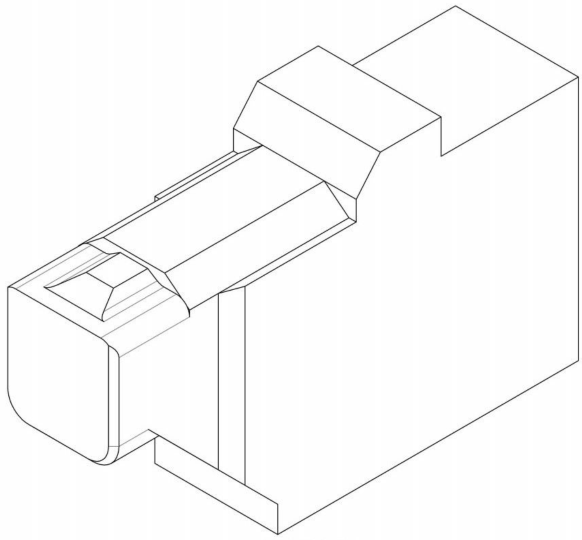


SEC.S-S



SEC.T-T





3D VIEW

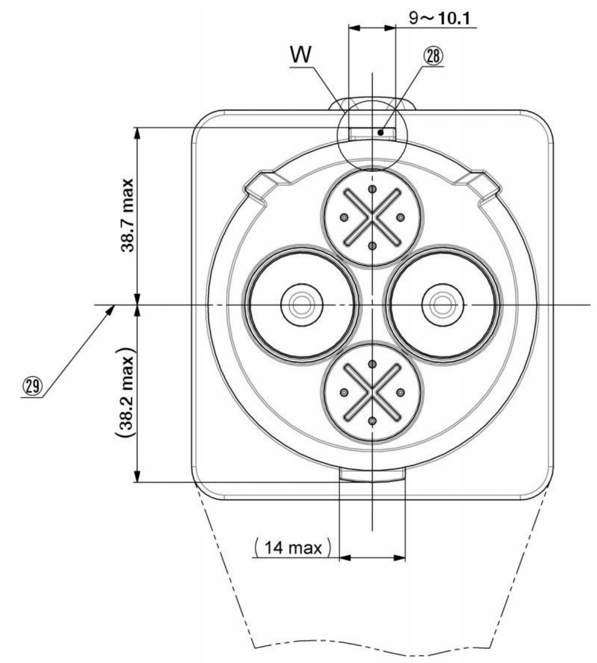
STANDARD SHEET 3-Ie

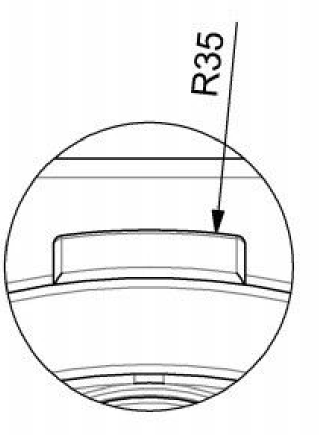
(*Clause* 9.1)

MAXIMUM OUTLINE OF LATCH

Sheet 1

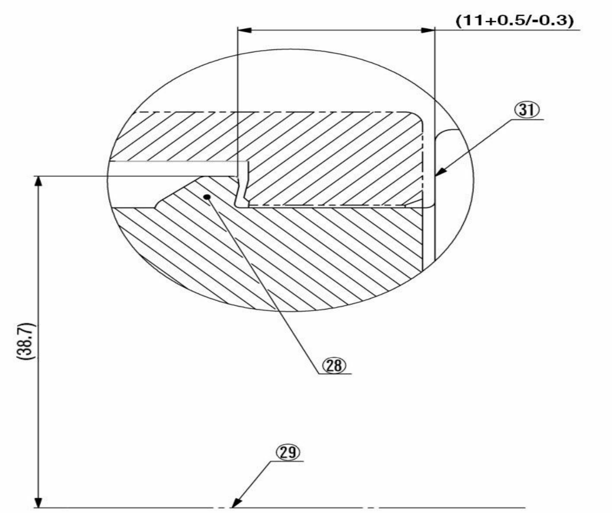
All dimensions in millimetres.
Dimensions in parenthesis for reference.





DETAIL W

(㉚)



DETAIL U

Key

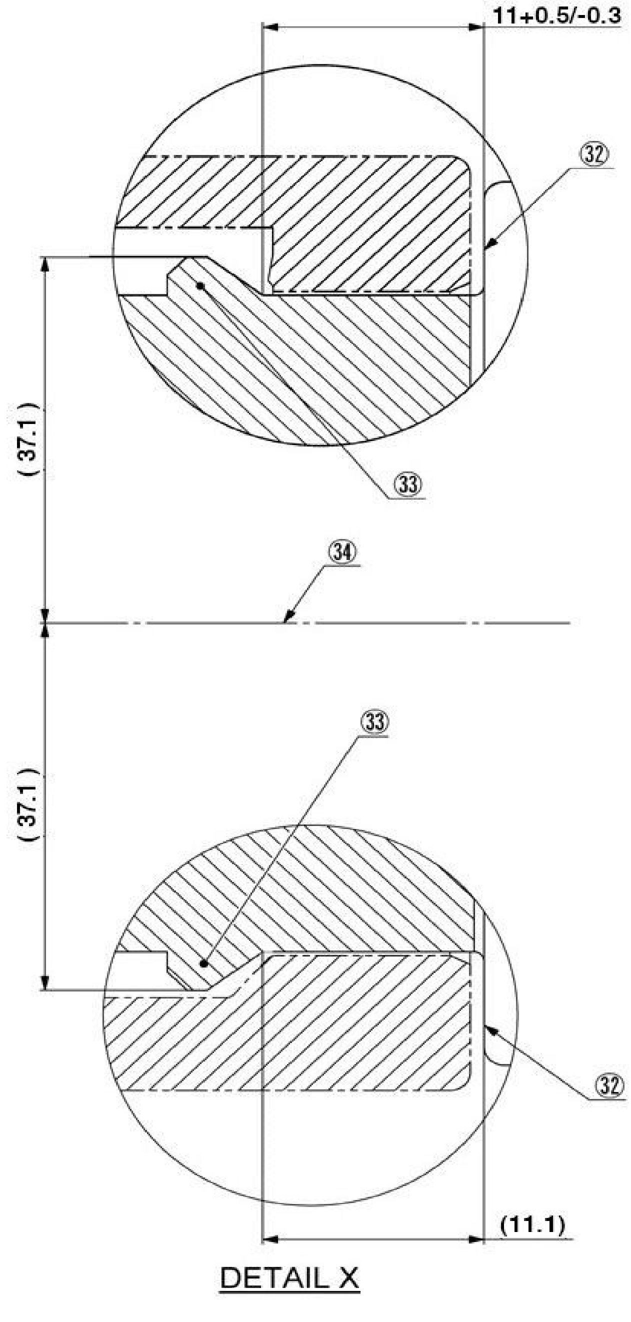
28	Latch (The sketches are not intended to restrict design of latch shape).
29	Centre line of vehicle connector.
30	Optional shape.
31	Standard datum plane of vehicle connector

STANDARD SHEET 3-If

(*Clause* 9.1)

OPTIONAL OUTLINE OF LATCH

All dimensions in millimetres.
Dimensions in parenthesis for reference.



Key

32	Standard datum plane of vehicle connector.
33	Latch (the sketches are not intended to govern design of latch shape).
34	Centre line of vehicle connector.

STANDARD SHEETS CONFIGURATION FF

(*Clause* 9.1)

VEHICLE COUPLER 200 A, 1 000 V d.c. ALL MODES

CONTACT FUNCTIONALITY

The functionality for d.c. configuration C Combo-2 charging is defined in the table below.

NOTE − The coding for the d.c. charging is described in IEC 61851-23, Annex CC.

Table 303 Functionality of the Contacts for d.c. Configuration FF

Name according to IS 17017(Part 2/Sec 2) Standard Sheet 2-II	Functionality
PE	PE[a]
CP	CP[b]
PP	PP[a]
N	optional
L1	optional
L2	optional
L3	optional
DC+	d.c.+
DC-	d.c.-

[a] Same function as in IS 17017 (Part 2/Sec 2), Standard Sheets II-2.

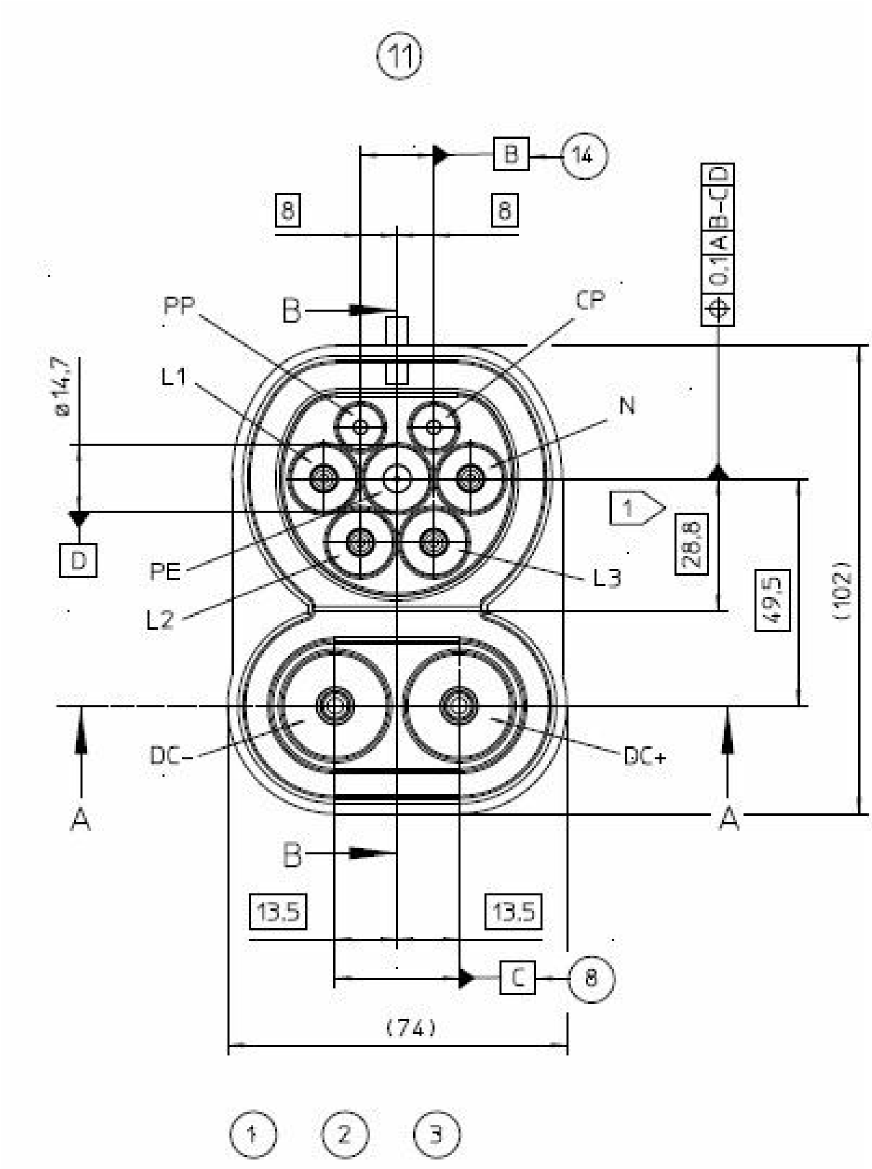
[b] CP may have an extended function as described in IEC 61851-23, Annex CC

STANDARD SHEET 3-IVa

(*Clause* 9.1)

VEHICLE INLET
MODES 2, 3 AND 4

Sheet 1

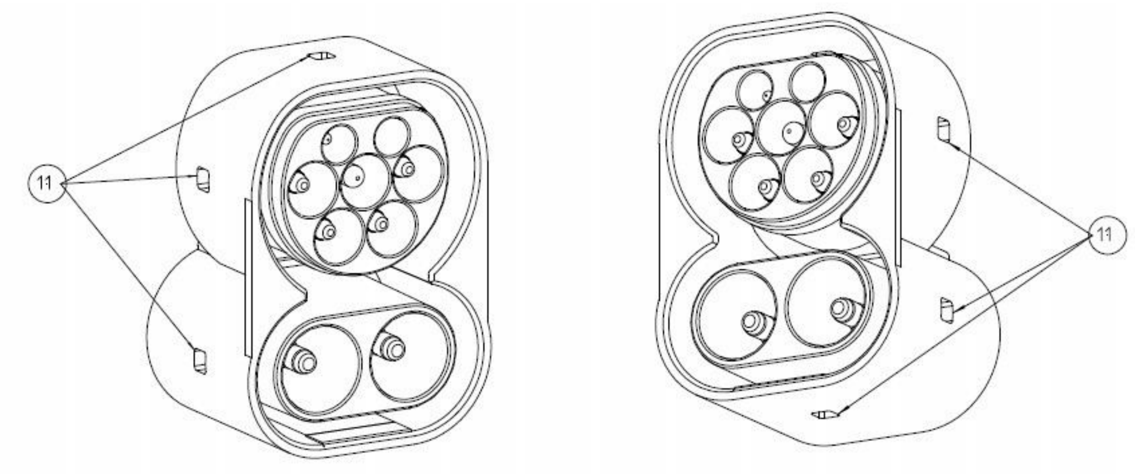


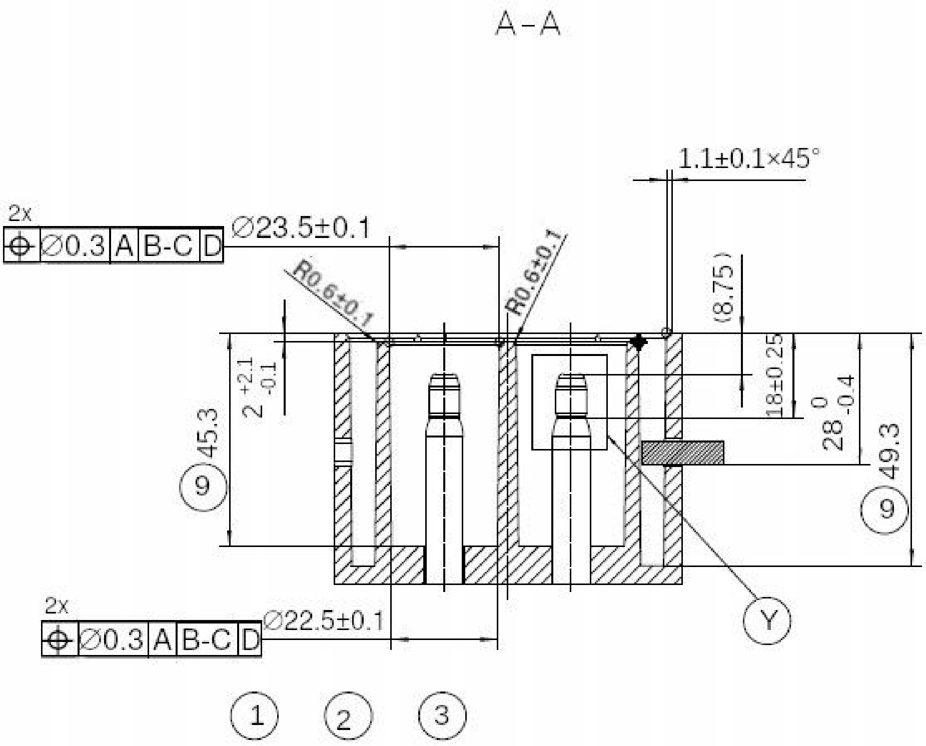
STANDARD SHEET 3-IVa

(*Clause* 9.1)

VEHICLE INLET
MODES 2, 3 AND 4

Sheet 2 *(continuation of Sheet 1)*



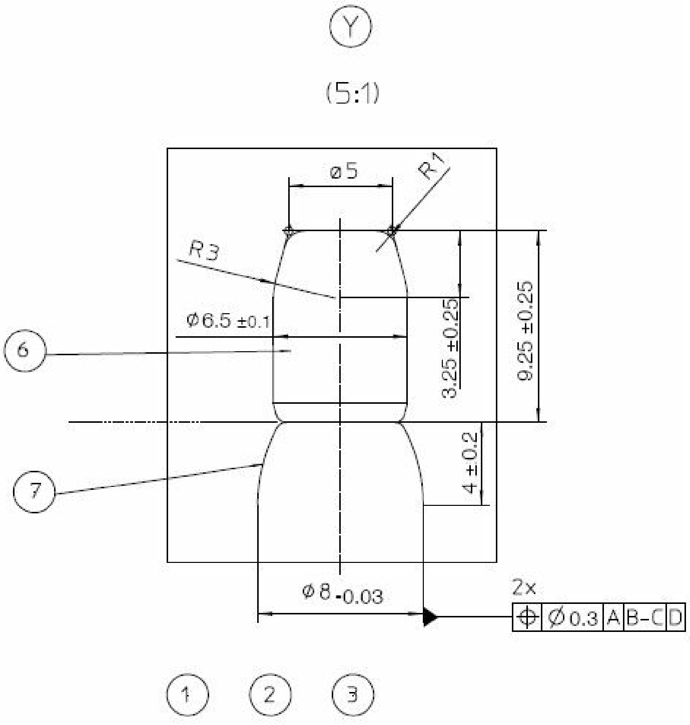


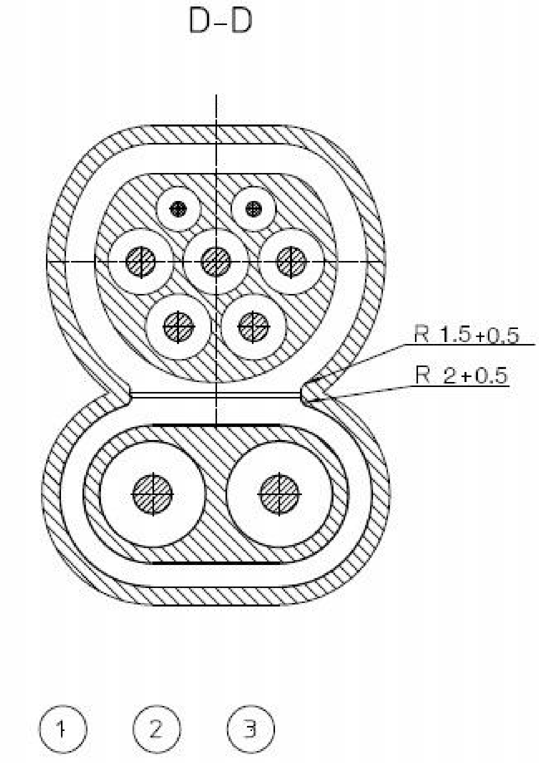
STANDARD SHEET 3-IVa

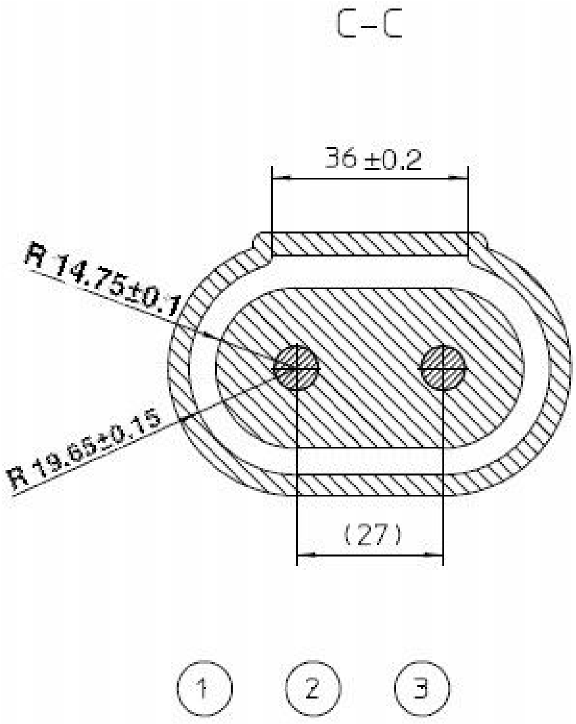
(*Clause* 9.1)

VEHICLE INLET
MODES 2, 3 AND 4

Sheet 3 *(continuation of Sheet 2)*





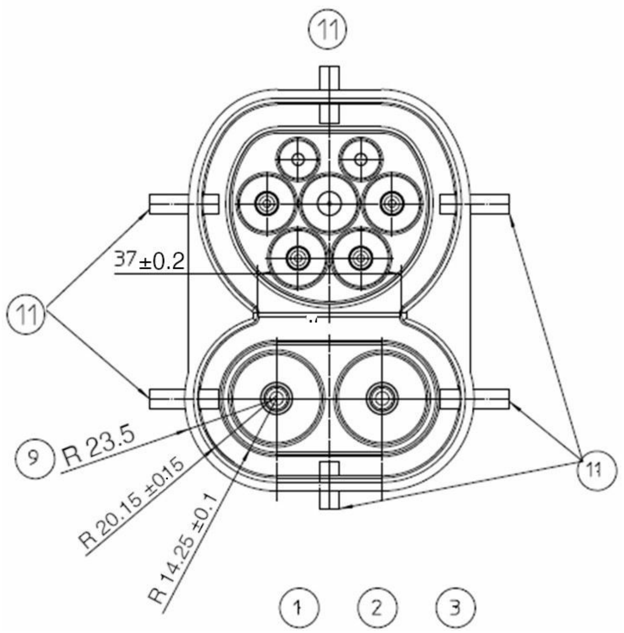


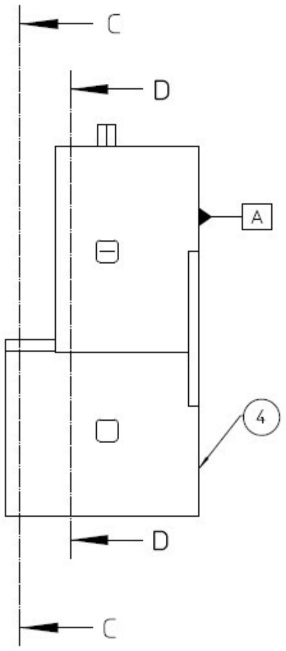
STANDARD SHEET 3-IVa

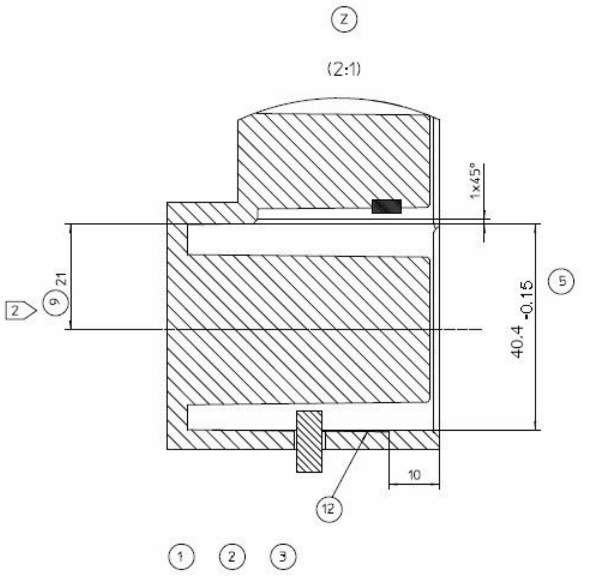
(*Clause* 9.1)

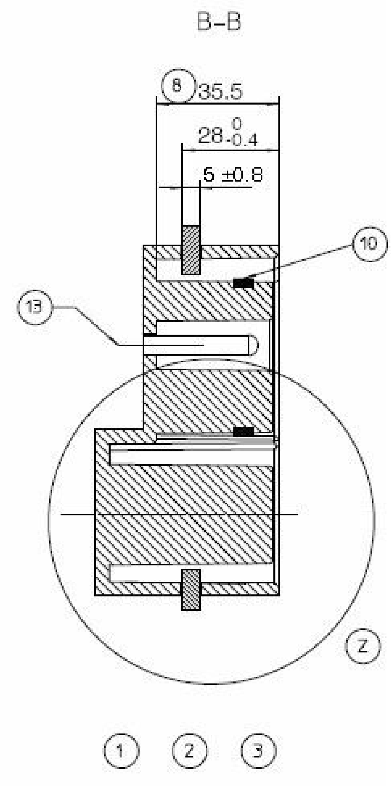
VEHICLE INLET
MODES 2, 3 AND 4

Sheet 4 *(continuation of Sheet 3)*









STANDARD SHEET 3-IVa

(*Clause* 9.1)

VEHICLE INLET
MODES 2, 3 AND 4

Sheet 5 *(continuation of Sheet 4)*

Key

1 All dimensions in millimetres.

2 Missing dimensions and ratings (a.c. area) according to IS 17017(Part 2/Sec 2), standard sheet 2-IIf.

3 General tolerance ISO 2768-mH.

4 Datum plane.

5 If necessary, a deviation from Tab 1 could be accepted, as long as a safe locking is guaranteed by other means. In this case Tab 2 is valid.

6 Insulated end cap.

7 Contact.

8 From 2 x diameter 8.

9 Minimum.

10 Area for optional sealing.

11 Further possible locking positions.

12 Optional phase-out off the step.

13 Datum axis PE.

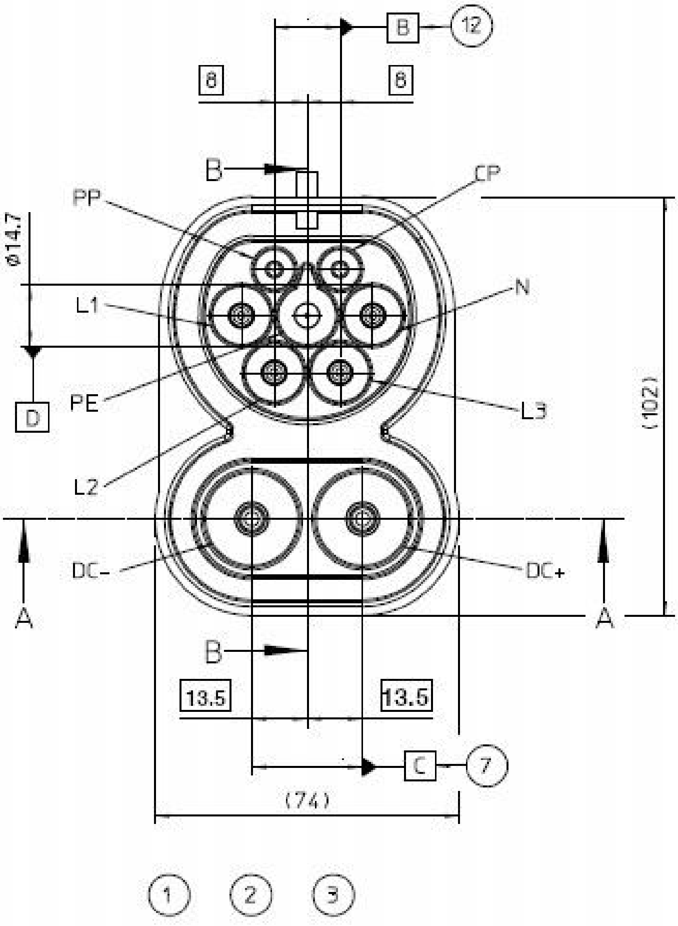
14 From 2 x diameter 3.

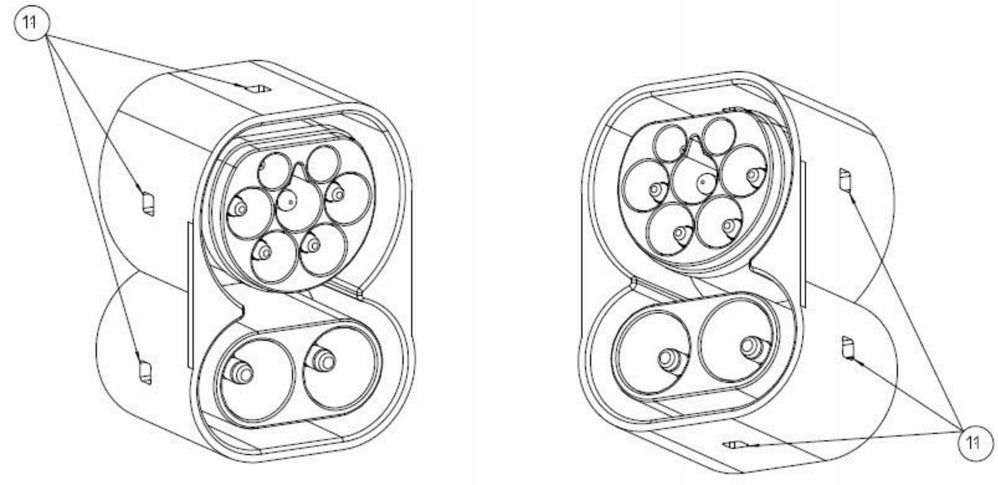
STANDARD SHEET 3-IVB

(*Clause* 9.1)

VEHICLE INLET, ALL MODES

Sheet 1



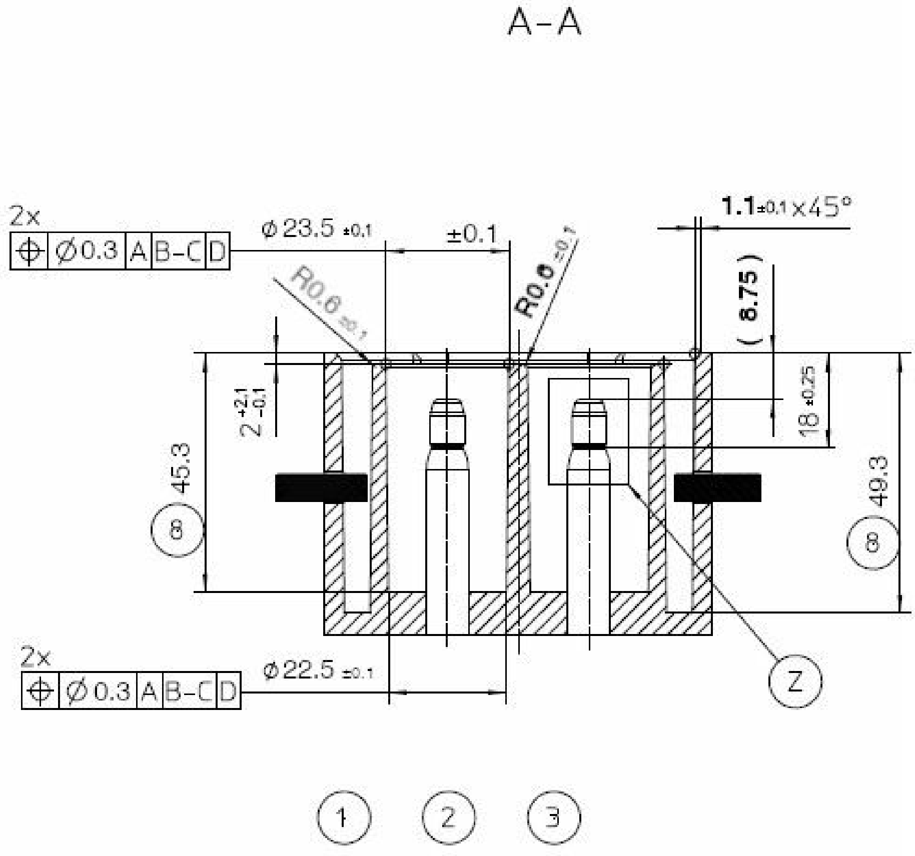


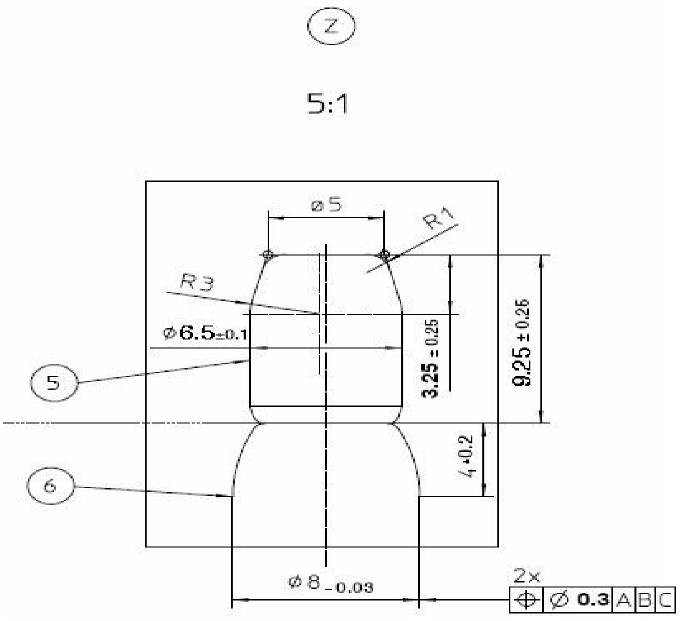
STANDARD SHEET 3-IVb

(*Clause* 9.1)

VEHICLE INLET
ALL MODES

Sheet 2 *(continuation of Sheet 1)*



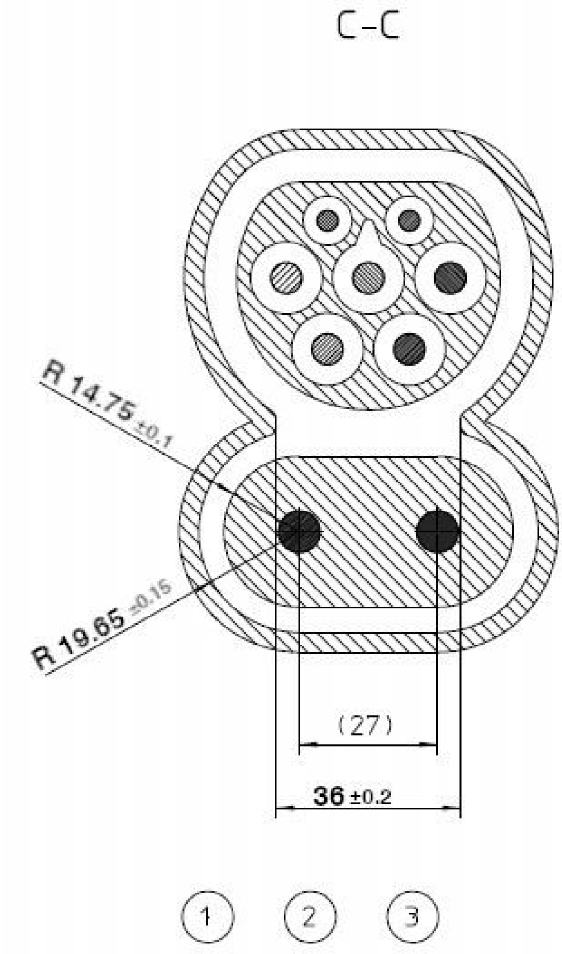


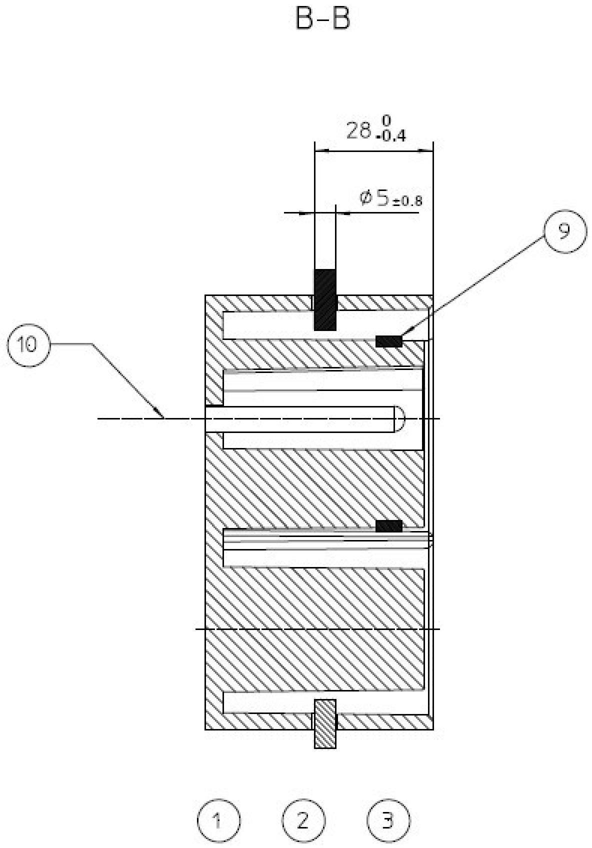
STANDARD SHEET 3-IVb

(*Clause* 9.1)

VEHICLE INLET
ALL MODES

Sheet 3 *(continuation of Sheet 2)*





STANDARD SHEET 3-IVb

(*Clause* 9.1)

VEHICLE INLET ALL MODES

Sheet 4 *(continuation of Sheet 3)*

Key

1 All dimensions in millimetres.

2 Missing dimensions and ratings (a.c. area) according to IS 17017(Part 2/Sec 2); standard sheet 2-IId.

3 General tolerance ISO 2768-mH.

4 Datum plane.

5 Insulated end cap.

6 Contact.

7 From 2 x diameter 8.

8 Minimum.

9 Area for optional sealing.

10 Datum axis PE.

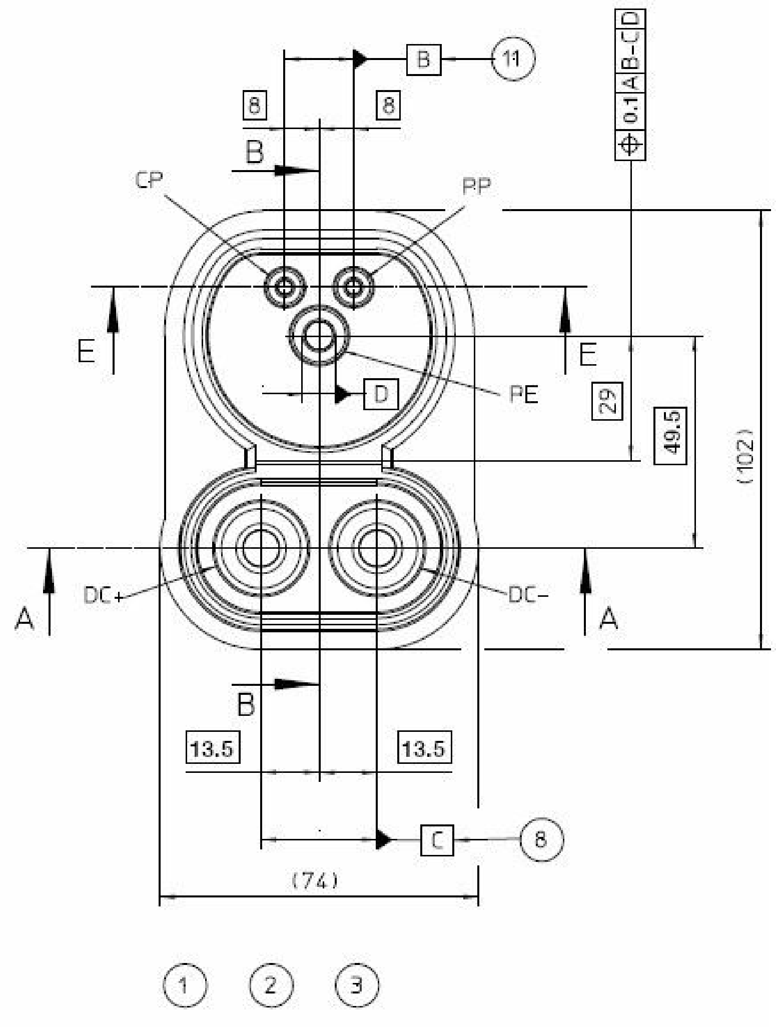
11 Further possible locking positions.

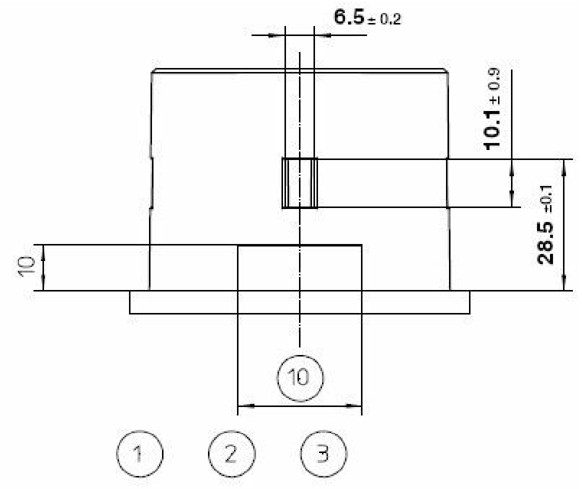
12 From 2 x diameter 3.

STANDARD SHEET 3-IVc

(*Clause* 9.1)

VEHICLE CONNECTOR - MODE 4
Sheet 1



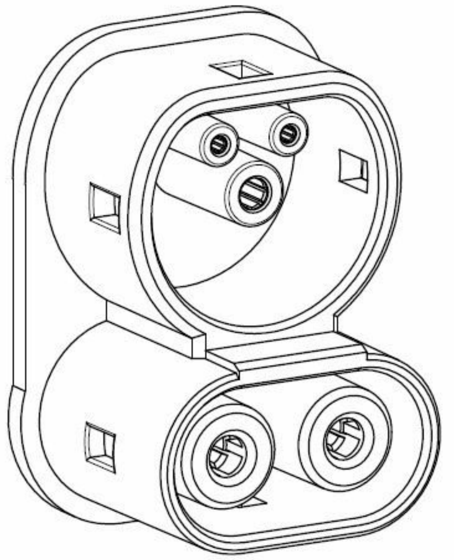


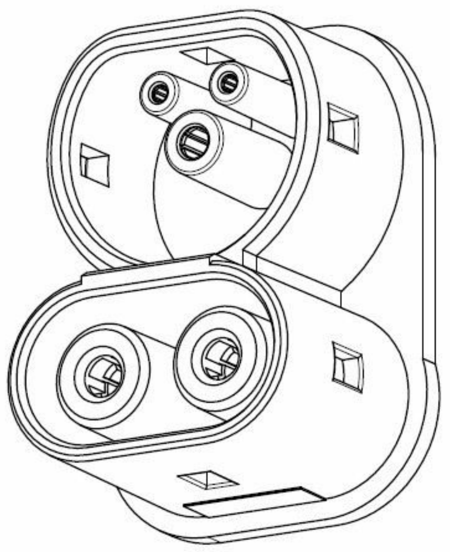
STANDARD SHEET 3-IVc

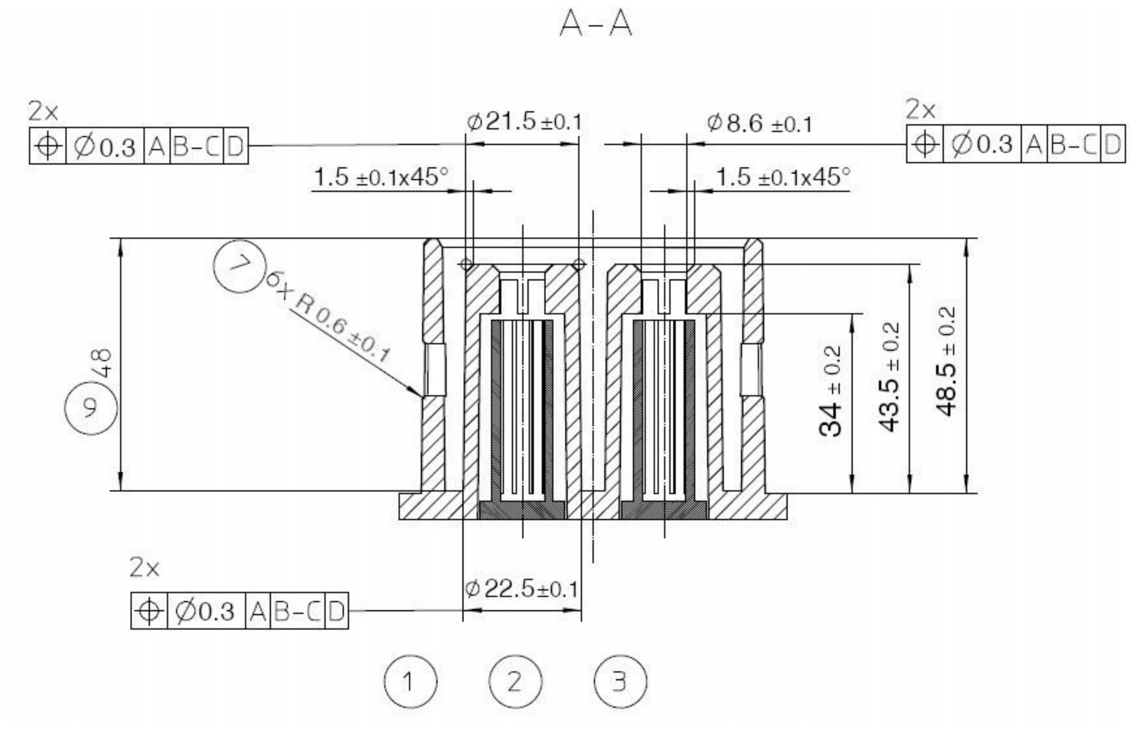
(*Clause* 9.1)

VEHICLE CONNECTOR - MODE 4

Sheet 2 *(continuation of sheet 1)*





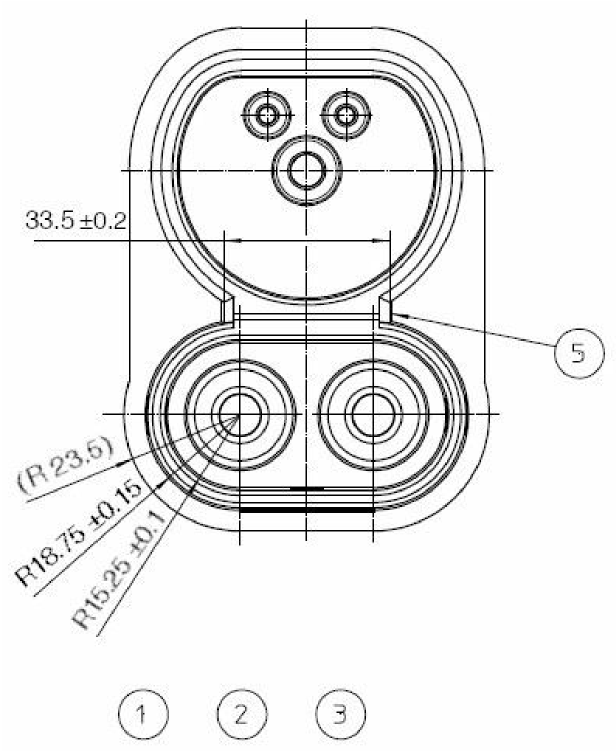


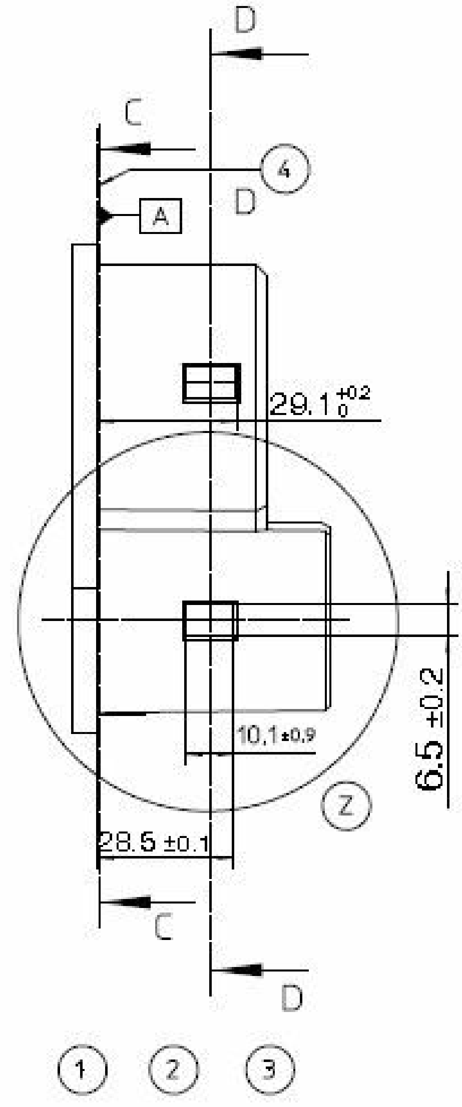
STANDARD SHEET 3-IVc

(*Clause* 9.1)

VEHICLE CONNECTOR - MODE 4

Sheet 3 *(continuation of sheet 2)*



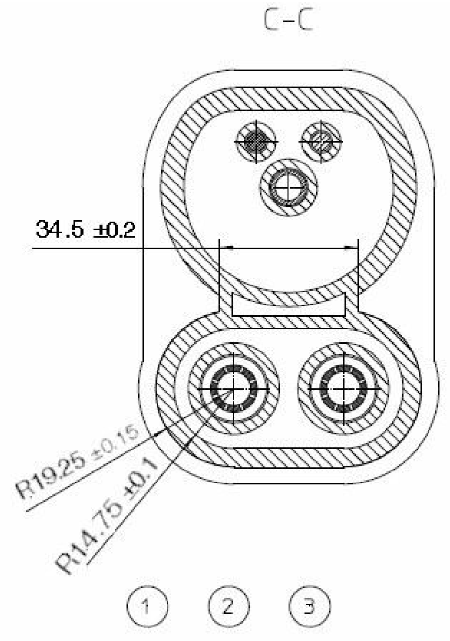


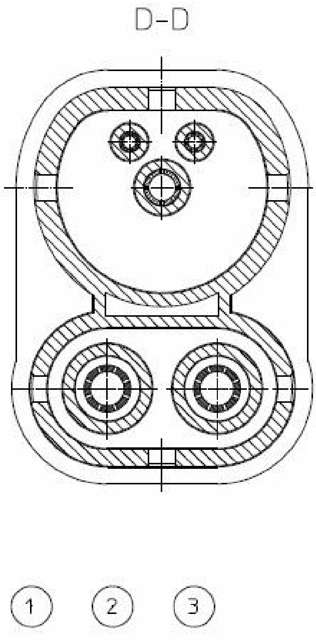
STANDARD SHEET 3-IVc

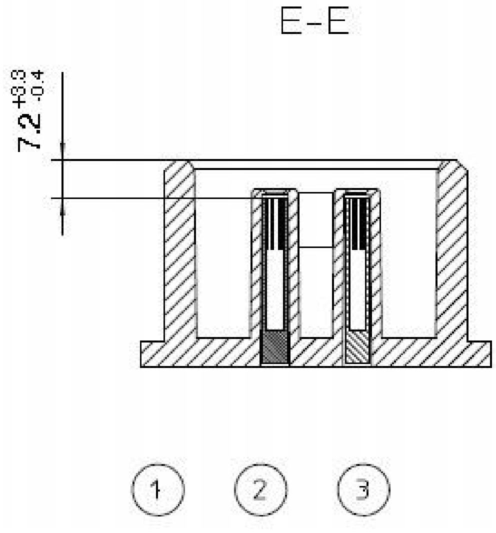
(*Clause* 9.1)

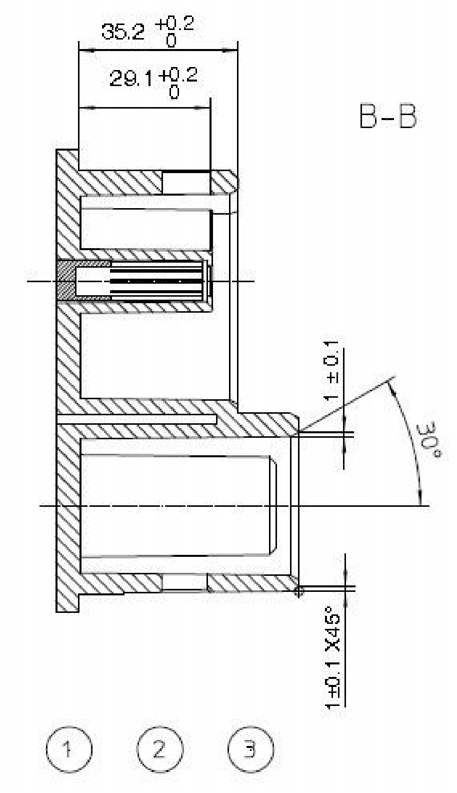
VEHICLE CONNECTOR - MODE 4

Sheet 4 *(continuation of Sheet 3)*









STANDARD SHEET 3-IVc

(*Clause* 9.1)

VEHICLE CONNECTOR - MODE 4

Sheet 5 *(continuation of Sheet 4)*

Key

1 All dimensions in millimetres.

2 Missing dimensions and ratings (a.c. area) according to IS 17017 (Part 2/Sec 2), standard sheet 2-IIe.

3 General tolerance ISO 2768-mH.

4 Datum plane.

5 Chamfer 2 +0.5 × 45°.
Radius R2 + 0.5.

6 Contour up to the choice of the manufacturer. The lateral projection shall remain unchanged.

7 Rounding off at the locking cut-out.

8 From 2 x diameter 8.6.

9 Minimum.

10 Minimum 12 mm.

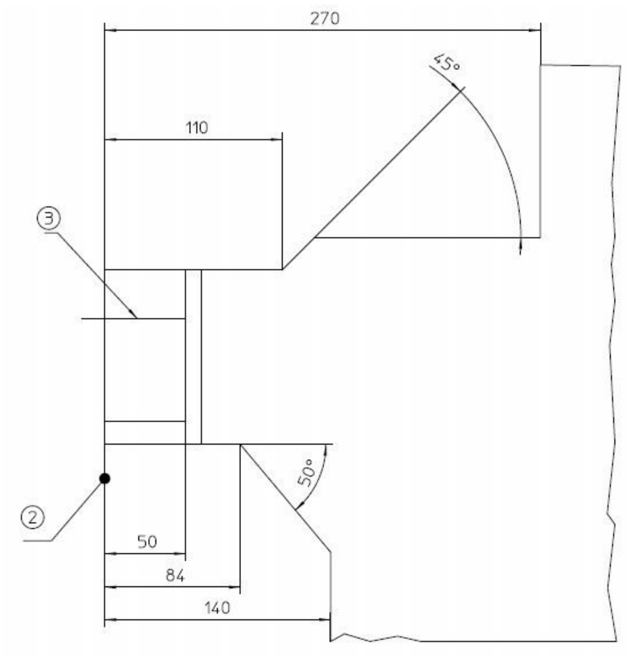
11 From 2 x diameter 3.5.

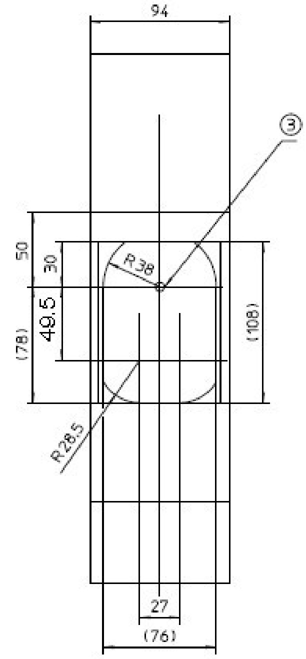
STANDARD SHEET 3-IVd

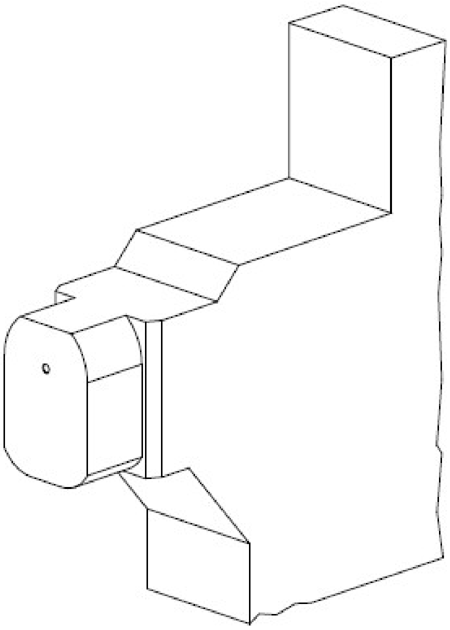
(*Clause* 9.1)

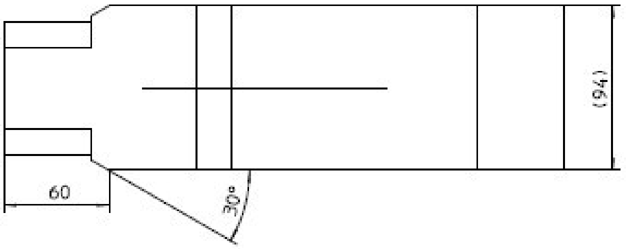
VEHICLE CONNECTOR - RECOMMENDED PACKAGING ROOM

Sheet 1









Key

1	All linear dimensions in millimeters.
2	Datum Plane.
3	Datum axis PE.

ANNEX A

(Foreword)

COMMITTEE COMPOSITION

Electrotechnology in Mobility Sectional Committee, ETD 51

Organization	*Representative(s)*
Department of Science And Technology, New Delhi, Delhi	Dr Sajid Mubashir (***Chairman***)
ABB India Limited, Faridabad, Haryana	Shri Divya Kumar
Amara Raja Batteries Limited, Tirupati, Andhra Pradesh	Shri Niranjan C. Shri Jasmeet Singh (*Alternate*)
Ashok Leyland Limited, Chennai, Tamil Nadu	Shri Arun Kumar Gelli Shri Huzefa A. C. (*Alternate* I) Ms Suchismita Chatterjee (*Alternate* II)
Ather Energy Private Limited, Bengaluru, Karnataka	Shri Swapnil Jain Shri Nishant D. K. (*Alternate* I) Shri Chennasetty Prashanth Manikumar (*Alternate* II)
Automotive Component Manufactures Association of India (ACMA), New Delhi, Delhi	Ms Pooja Sharma Shri Uday Harite (*Alternate*)
Bangalore Electricity Supply Company Limited, Bengaluru, Karnataka	Shri Anil Kumar Dsouza
Bharat Heavy Electricals Limited, Lodhi Road, New Delhi	Shri Imran Mansury Shri Pushkar Khakha (*Alternate*)
Bajaj Auto Limited, Pune, Maharashtra	Dr Philip Jose Shri Arvind Kumbhar (*Alternate*)
Bosch Limited, Bengaluru, Karnataka	Shri Pradeep Ramachandra Shri Hariprasad Gowrisankar (*Alternate* I) Shri Sanjay Khatri (*Alternate* II)
Castus Energy Solutions Private Limited, Chennai, Tamilnadu	Shri Sivam Sabesan
Center For Study of Science, Technology, and Policy, Noida, Uttar Pradesh	Dr Mridula Dixit Bharadwaj Shri Aumkar Borgaonkar (*Alternate* I) Shri Arunesh Karkun (*Alternate* II)
Central Electricity Authority, R K Puram, New Delhi	Shrimati Vandana Singhal Ms Seema Saxena (*Alternate*)
Central Electricity Regulatory Commission, New Delhi, Delhi	Shri M. M. Chaudhari
Central Power Research Institute (CPRI), Bengaluru, Karnataka	Dr Kuldeep Singh Rana
CG Power and Industrial Solutions Limited, Ahmednagar, Gujarat	Shri A. Sudhakaran Shri Sandeep R. Bachkar (*Alternate*)
Council of Scientific and Industrial Research, New Delhi, Delhi	Dr R. P. Aloysius Ms Priyanka Jain (*Alternate* I) Shri Atul Suresh Somkuwar (*Alternate* II)
Delta Power Solutions (India) Private Limited, Gurgaon, Haryana	Shri Akshaye Barbuddhe Shri R. Om Prakash (*Alternate*)
DENSO International India Private Limited, Gurugram, Haryana	Shri Noel Alexander Peters Shri Alok Kumar (*Alternate* I) Ms Alka Sharma (*Alternate* II)

Organization	*Representative(s)*
EV Motors India Private Limited, Noida, Uttar Pradesh	Shri Vinit Bansal Shri Nicco Bhabu (*Alternate* I) Shri Vikram Gulati (*Alternate* II)
Exicom Tele-Systems Private Limited, Gurugram, Haryana	Shri Akshay Ahuja Shri P. M. Singh (*Alternate*)
Fortum India Private Limited, Gurugram, Haryana	Shri Awadhesh Kumar Jha Shri Chinmay Shukla (*Alternate* I) Shri Ankit Maheshwari (*Alternate* II)
Hero MotoCorp Limited, Jaipur, Rajasthan	Shri Feroz Ali Khan Shri Subrat Kumar Dash (*Alternate*)
Honda Cars R and D India, Gautam Budh Nagar District, Uttar Pradesh	Shri Koji Tamenori Shri Adish Aggarwal (*Alternate* I) Shri S. Muthu Kumar (*Alternate* II)
Honda Motorcycle and Scooter India Private Limited, Gurugram, Haryana	Shri Suraj Agarwal Shri Sandeep Miskeen (*Alternate* I) Shri Vipin Sharma (*Alternate* II)
India Smart Grid Forum, Chanakyapuri, New Delhi	Shri Reji Kumar Pillai Shri Shuvam Sarkar Roy (*Alternate*)
India Yamaha Motor Private Limited, Uttar Pradesh, India	Shri Sanjeev Chugh Shri J. Emmanuel (*Alternate*)
Indian Electrical and Electronics Manufacturers Association, New Delhi, Delhi	Shri Mustafa Wajid, Meher Capacitors, Bengaluru Shri Vivek Arora (*Alternate* I) Shri Pande J. (*Alternate* II)
Indian Institute of Technology (IITB), Mumbai, Maharashtra	Prof Sagar Mitra Prof Venkatasailanathan Ramadeigan (*Alternate* I) Prof Kishore Chatterjee (*Alternate* II)
Indian Institute of Technology (IITM), Chennai, Tamil Nadu	Dr Prabhjot Kaur Ms Anitha Dhianeshwar (*Alternate*)
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International Copper Association India, New Delhi, Delhi	Shri Debdas Goswami
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Masstech Controls Private Limited, Mumbai, Maharashtra	Shri Anurag Patil Shri Subhash N Patil (*Alternate* I) Shri Bhushan Bharambe (*Alternate* II)
Ministry of Heavy Industries, New Delhi, Delhi	Shri A. A. Deshpande Automotive Research Association of India, Pune. Maharashtra Shri M. M. Desai (*Alternate*) Automotive Research Association of India, Pune. Maharashtra.
Narnix Technolabs Private Limited, Sector 13 R K Puram, New Delhi	Shri Narang N. Kishor

Organization	*Representative(s)*
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Phoenix Contact India Private Limited, New Delhi, Delhi	Shri Amit Tyagi Shri Alok Aggarwal (*Alternate* I) Shri Amit Sharma (*Alternate* II)
Rajasthan Electronics and Instruments Limited, Jaipur, Rajasthan	Shri A. K. Jain Shri R K Gupta (*Alternate* I) Shri D K Gupta (*Alternate* II)
Renault India Private Limited, Kancheepuram District, Tamilnadu	Shri Vijay Dinakaran Shri Rajendra Khile (*Alternate*)
Siemens Limited, Navi Mumbai, Maharashtra	Shri Bidyut Mazumdaer Shri Amit Kekare (*Alternate*)
Society of Indian Automobile Manufacturers, New Delhi, Delhi	Shri Prashant K. Banerjee Shri Saurabh Rohilla (*Alternate*)
Tata Motors Limited, Pune, Maharashtra	Dr Ajit Kumar Jindal Dr Raja Munusamy (*Alternate* I) Mr Sunil Nagpal (*Alternate* II)
Tata Power Company Limited, Mumbai, Maharashtra	Shri Paresh Bhatt Ms Nushreen Ahmed (*Alternate* I) Shri Manoj Kumar (*Alternate* II)
Tata Power Delhi Distribution Limited, Kingsway Camp, Delhi	Dr G. Ganesh Das
Tech Perspect Software Private Limited, Noida, Uttar Pradesh	Shri Sumit Ahuja Shri Ramesh Arora (*Alternate* I) Shri Vishal Sharma (*Alternate* II)
The Energy and Resources Institute, New Delhi, Delhi	Shri Alekhya Datta Dr Shashank Vyas (*Alternate* I) Shri Neshwin Rodrigues (*Alternate* II)
Toyota Kirloskar Motor Private Limited, Ramanagara District, Karnataka	Shri Channappa Revadi Shri Raju M. (*Alternate* I) Shri M. Suchindran (*Alternate* II)
TVS Motor Company, Harita, Hosur	Dr S. Jabez Dhinagar Shri Ravindar Naik (*Alternate*)
UL India Private Limited, Whitefield, Bengaluru	Shri V Manjunath Shri Manish Kothari (*Alternate*)
Vision Mechatronics Private Limited, Thane (W), Maharashtra	Dr Rashi Gupta Mr Bharat Gupta (*Alternate*)
In personal capacity (*506/2 Kirti Apartments, Mayur Vihar Phase 1 extension, Delhi – 110 091*)	Shri P. K. Mukherjee
BIS Directorate General	Shri Rajeev Sharma, Scientist 'F' and Head (ETD) [Representing Director General, BIS (*Ex-officio*)]

Member Secretary

Shri P. V. Mathew
Scientist 'E' (ETD), BIS

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Amendments Issued Since Publication

Amend No.	Date of Issue	Text Affected

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